APPENDIX 1

ENHANCED VAPOR RECOVERY TECHNOLOGY REVIEW

COMMENT/RESPONSE

This Appendix contains ARB responses to three sets of comments on the EVR Technology Review provided by EVR stakeholders. The most recent set of comments, associated with the June 18, 2002 workshop, is presented first. The second set of comments was received after issuing the draft EVR tech review report in April 2002. The third set are associated with February 5, 2002 workshop. The third set was previously published in the April 2002 draft report.

Comments

SUMMARY OF EVR TECH REVIEW COMMENTS

ASSOCIATED WITH JUNE 18, 2002 WORKSHOP REVIEW (comments received as of July 31, 2002)

Comment letters, faxes, e-mails received from:

1. American Petroleum Institute (API)
2. California Independent Oil Marketers Association (CIOMA)
3. Hirt
4. Husky
5. OPW
6. Western States Petroleum Association (WSPA)

TOPIC INDEX:

EVR Schedule (WSPA)

Comment 1: WSPA believes that the implementation schedule for Module 3 violates California Health and Safety Code Section 41956.1 and CARB Resolution 00-9.

Response: *Staff maintains that the ORVR implementation is consistent with State Law requirements. A detailed response was provided to WSPA by ARB legal counsel.*

EVR Certification (API, CIOMA, Hirt, WSPA)

Comment 2: API points out that use of nozzles that meet EVR standards could provide emission reductions before April 2007 when used with pre-EVR systems. API is concerned that since nozzles are system-specific, then use of the nozzles with pre-EVR systems may not be possible, unless nozzles are specifically certified for use with pre-EVR systems.

Comment 3: WSPA is concerned that certifying an EVR nozzle to operate with a pre-EVR system may create operationally incompatibility in some cases. WSPA requests information on how compatibility and paperwork issues regarding the use of EVR-certified nozzles with pre-EVR systems will be resolved.

Response: *California Health and Safety Code section 41956.1 requires that all repair or replacement parts used during the "4-year clock" be certified. Section 19 of CP-201, Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities, provides for certification of replacement parts. Note that certified replacement parts that meet the most current performance standards must be used if the replacement components are commercially available and are compatible with the existing vapor recovery system*.

Comment 4: API is concerned that equipment availability could become a problem if nonsystem-specific equipment is required to go through a 180-day durability test as part of a system certification before it can be used on a different certified system. API requests that these components be exempt from the durability test, or, at a minimum, that the equipment be tested for durability on a much shorter period than 180 days.

Comment 5: By definition non-system-specific components are defined by their own performance criteria and do not directly affect the performance of the Phase 1 systems. WSPA sees no technical basis for requiring non-system specific components to be certified with Phase 1 systems. WSPA recommends that non-system-specific components be certified independently without the requirement to undergo concurrent Phase 1 system certification as is the current policy. Under the WSPA proposed policy components could "age" at test sites and then

be removed for bench testing. WSPA believes that this recommendation would lead to a significant increase in certified components.

Response: *First of all, CARB certifies vapor recovery systems, not vapor recovery components. Second, the certification test includes a system operational test of a minimum of 180 days, which is not the same as a 180-day component durability test. Third, the concept of non-system-specific components is to allow for interchange of certain components once the components have already been certified as part of a complete system. The permission to interchange components is not automatic, some testing is required for already certified components to ensure the component is compatible and operates successfully on other vapor recovery systems. To reinforce our previous statements, we will not certify any component that has not met vapor recovery system certification requirements, including successfully passing an operational test of at least 180 days.*

Comment 6: CIOMA is alarmed at staff's proposal to relax the operational test requirements for certification of Phase II systems equipped with in-station diagnostics (ISD). Currently, no equipment failures are allowed during the operational test, which has a duration of a minimum of 180 days. Staff's proposal would allow some limited failures for problems identified by ISD only. If ISD-identified failures occurred, with no more than 9 days of downtime to allow repairs, the system could be certified. However, staff proposed that such a system would have a limited term certification of four years. CIOMA points out that the worst case scenario for consumers of the EVR Phase II system is that only one system will be certified by April 1, 2003 and that system will only have the limited certification. This would force consumers to purchase equipment that is not robust enough to actually pass the certification test, and hope that the manufacturer will recertify substantially the same system when the certification expires. The EVR costs should be re-evaluated to consider the additional cost associated with having to replace equipment that has not reached the end of it's useful life but has lost it's certification.

Comment 7: During the workshop, CARB presented suggested ISD certification maintenance criteria that described how certain equipment failures may still result in Phase 2 systems becoming EVR certified. However, the EVR certification will require the use of an ISD system and CARB will issue an Executive Order stating that the EVR certification would be "non-renewable" and would have to complete full certification tests after 4 years. WSPA questions whether making the EVR certification "non-renewable" could result in manufacturers deciding not to renew the certification, as required, after 4 years. The manufacturer actually may no longer be in business leaving the gasoline dispensing facility owner stuck with having to purchase a whole new system. This potential scenario may result in operators not purchasing these types of

"non-renewable" EVR certified systems and instead wait for fully certified EVR systems.

Given these concerns, WSPA recommends that CARB make clear that if only "non-renewable" EVR certified systems are available, operators should be given the opportunity of electing to install EVR certified equipment that won't require additional certification testing unless deficiencies are identified.

Response: *As stated at the June 18, 2002 workshop, staff believe it will be more difficult for an EVR Phase II system to pass the certification operational test when paired with an ISD system. This is because of the continuous monitoring aspects of vapor recovery system operating parameters by ISD. Without ISD, the vapor recovery system is only checked periodically using field test procedures. Thus, the chance of identifying a failure is much higher with an ISD system. Since the concept of ISD is to allow the operator to repair the failure when identified, it seems reasonable to allow some repair during the operational test, but only when the failure is identified by ISD. Equipment failures identified by the periodic field tests will continue to result in termination of the operational test.*

Staff agrees that a limited certification of four years is not desirable from a consumer standpoint. We do want to point out that in the case where the certification does expire, state law provides that the system may be used for up to an additional four years. However, staff has reconsidered the proposal and has decided to drop the requirement to recertify after four years for systems with ISD-identified deficiencies during the operational test. Note that system certifications are already required to be reviewed four years after being issued (section 18 of CP-201, Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities), but are automatically renewed unless any documented deficiencies are not resolved.

Comment 8: Hirt comments that any changes in the Innovative Systems provision of CP-201 allow alternative approaches and methods as long as the alternative methods produce results that meet the general performance standards set by ARB and expected of all systems. To expect that alternative approaches will, in all cases, produce performance superior to non-alternative approaches would be to place an unequal burden upon the innovative system developers and discourage alternative developments. The superiority of one system may be cost, test technique, ease of inspection, etc. The measure of superiority of systems meeting ARB standards may well be left to the marketplace.

Response: *As stated at the June 18th workshop, the intent of the Innovative Provision (section 2.3 of CP-201) is to allow design flexibility for systems that emit much less than the standards allow. We disagree that this approach will discourage the development of innovative systems. For all systems that meet*

CARB emission standards, we agree that other measures of system superiority will be a factor in the marketplace.

Comment 9: Hirt requests that CP-201 define performance standards for all systems and not details that are specific to any one design alternative.

Response: *The primary emission standards are the same for all vapor recovery system types. Secondary standards are tailored to system type to define proper operating conditions*

Comment 10: WSPA states that major nozzle manufacturers in the U.S. have indicated that the EVR performance standards as defined in Modules 4 and 5 can be tested independently of a Phase 2 system because nozzle performance in these areas are not impacted as part of a Phase 2 system. Understanding that nozzles are system-specific components, nozzles would still be required to be tested with Phase 2 systems to ensure collection efficiencies only. WSPA is confident that this is the best approach to encourage Phase 2 system vendors certification with multiple nozzle types and brands. WSPA would appreciate an explanation regarding CARB's recommendation regarding independent nozzle certifications considering that nozzles will continue certification as part of a Phase 2 system assuring proper vapor collection.

Response: *We disagree that spillage, including post-fueling drips, is solely attributable to the vapor recovery nozzle. For example, poorly functioning swivels and retractor hoses may make it difficult to fuel and increase incidence of spills. Spillage will be assessed separately for each certified Phase II vapor recovery system.*

Comment 11: In CP-201 Section 16.1 non-specific components are defined as, "Only those components that can be defined by performance specifications, and that do not directly affect the performance of the system, shall be considered non-system-specific components." As WSPA sees the situation, all components redefined in the March 2002 amendments as "system-specific" meet the criteria for non-system-specific components and should accordingly be reclassified. In discussions with CARB staff, WSPA understands that the basis for the proposed Phase 1 system-specific component re-designations was to give CARB a technique for defining and naming a Phase 1 system as opposed to a technical necessity.

"Understanding that the performance of the system specific components are not affected by other Phase 1" non-system specific "components," WSPA again recommends that CARB reverse its redesignation of former Phase 1 non-system specific equipment to system specific. At a minimum, WSPA would appreciate a clarification on this matter.

Response: The definitions of system-specific and non-system-specific components will be modified to clarify how they are defined and certified. Proposed modifications will be presented at the workshop scheduled for September 9, 2002.

ISD (WSPA)

Comment 12: There are potential problems with fitting a mass flow sensor inside a very crowded six-pack dispenser. WSPA does not believe that the installation of Mass Flow sensors is required under the CP-201, ISD Appendix. WSPA would like to know whether CARB has evaluated the ability of six-pack dispensers to adequately accommodate a mass flow sensor. WSPA would also like to know if CARB has considered how it would deal with a six-pack design that cannot accommodate a mass flow sensor inside the dispenser.

Response: *The use of a mass flow sensor is not required under CP-201 in the Appendix. CARB has evaluated the installation concerns related to the six-pack dispenser. As part of the ISD Pilot Program, one of the stations selected did use a six-pack dispenser configuration and the installation was successfully accomplished. We understand that dispenser manufacturers are working closely with the ISD manufacturers to allow for flow meter installation on both new dispensers as well as field retrofits.*

Comment 13: WSPA requests an advisory stating that ISD is intended to be used as a compliance tool and not an enforcement tool. WSPA further requests that specific language be included in CP-201 or as a separate guideline document.

Response: *ARB staff has explained our position on ISD enforcement in many forums, however CAPCOA enforcement managers have expressed a differing opinion. The ARB will continue to work with CAPCOA, industry and other stakeholders to establish enforcement guidelines that represent the goals of ISD. Modification to CP-201 or the issuance of an advisory with our intent may not be the best way to address this issue, however we will consider those options.*

Comment 14: WSPA states that CARB has based the development and the need for ISD on two reports on pre-EVR balance and vac-assist equipment and systems. The data from these reports have a direct impact on the “cost effectiveness” of ISD. Neither report is represented as a final version and neither report recommended ISD. Each report contained recommendations that did not include ISD. Our read of the two reports indicates that with the implementation of the recommendations that were primarily equipment improvement related, the emissions identified would be minimized without ISD. WSPA requests that CARB further explain how they used the information from the two reports to

justify ISD. WSPA requests that CARB explain why and how they incorporated the emissions from these two reports into their ISD emission reduction estimates.

Response: *The two reports cited were used to estimate in-use efficiencies for assist and balance Phase II vapor recovery systems. The ARB emission inventory assumes an in-use efficiency of 90%, but air pollution control districts believed the number was much lower. The two reports, though not finalized, are based on field tests of vapor recovery system performance. If WSPA would like to provide additional field test data on in-use performance of current systems, this could be used to refine current in-use efficiency estimate.*

Equipment improvements do reduce emissions. However, equipment failures can and do occur for reasons ranging from improper installation to lack of maintenance. Excess emissions from some equipment failures can be identified by either field testing or ISD. ISD provides a continuous monitor for equipment failures and is the best way to minimize excess emissions.

UST pressure standard (WSPA)

Comment 15: WSPA would like CARB to confirm, as mentioned in the workshop, that the highest pressure during the 30-day period can exceed 1.5 in WC as long as the average pressure remains below 1.5 WC.

Response: *As explained at the workshop, the 1.5 in maximum pressure limit was originally intended to be a 30-day rolling average, but this intent is not clear in the existing section 4.6.4. Section 4.6.4 will be revised to clarify the following steps for determining daily high pressure compliance:*

1. *Calculate the average pressure reading for each hour.*
2. *Identify the highest one-hour pressure average over a 24-hour period. This is the daily high pressure.*
3. *Compute rolling 30-day average of daily high pressures - may not exceed +1.5 inches water.*

Pressure-related fugitives (Husky)

Comment 16: Husky suggests using a controlled leak or an open system to determine pressure-related fugitives. There would be flow in and out of the “leak” and the system pressure would remain at zero. The vapors lost would be measured documenting the maximum fugitive emissions if the system had a large leak.

Response: *It would be difficult to measure leaks from an open system. Staff is considering using actual pressure measurements combined with the largest allowable leakrate.*

Pressure drop budget (WSPA)

Comment 17: It is WSPA's understanding that CARB is considering manufacturers to identify a pressure budget for the entire system in addition to a pressure drop for each component of the system. WSPA would support this approach, as we believe it would increase the possibility of interchanging non-system specific components with other vac-assist systems.

Response: *The EVR pressure drop standards vary for assist and balance systems. Balance systems must meet the component and system pressure drops outlined in Table 5-1 of CP-201. Pressure drops for assist nozzles (see Table 6-1 of CP-201) will be documented during certification and will help define nozzles suitable for use on that system.*

Comment 18: WSPA requests an enforcement advisory to clarify that individual component pressure drops are measured during certification only.

Response: *A test method is under development to measure component pressure drops. It will be made clear in the applicability section of the test method that the method is to be used for certification purposes only.*

Nozzle/dispenser compatibility (WSPA)

Comment 19: Both CARB and WSPA recognize that the physical compatibility of the nozzle with the dispenser is an issue that needs to be addressed with regard to existing six-pack dispensers and EVR certified nozzles. CARB staff has stated that nozzles certified to work with unihose dispensers could be field-tested to verify that they work on six-pack dispensers. WSPA would like to know what general requirements CARB will develop to assure physical compatibility between EVR nozzle and six-pack dispenser. WSPA is interested in CARB guidelines for what constitutes a proper nozzle "hang-up."

Response: *Dispenser/nozzle compatibility is not specifically an unihose/six-pack issue. It is likely that the dispenser housing will be the same, whether one or three are installed. The concern is that the nozzle and dispenser housing be selected so that the dispenser housing does not cause the vapor check valve in the nozzle to be compromised. This may be as simple as specifying the nozzles that are compatible with the dispenser housing, or instructions for altering the size of the housing to accommodate various nozzles. This will be verified by checking the flow rate of nitrogen through a nozzle and hose assembly when hung up properly on the dispenser, and when not hung up. The test assembly will be separate from the hose and nozzle installed on the dispenser, and will be used to evaluate various types and sizes of nozzles.*

Processor system standards (Hirt)

Comment 20: Hirt asks why there are no Hazardous Air Pollutant emission requirements for "non-destructive" processors. HAPs, such as benzene and 1,3 butadiene can be present in the gasoline vapor that exhausts from "membrane" type processors. The exhaust of "non-destructive" processors goes into the atmosphere. The HAPs emissions exhausted by "non-destructive" processors have not been quantified. The public might falsely be lead to believe that "non-destructive" processors operate cleaner than "destructive" processors, which is not true.

Hirt also states that the term "destructive" processor is also a misleading term which is hurting their competitiveness in the marketplace. A thermal oxidizer, such as the one used by currently certified Hirt processors operate by causing a chemical reaction. Basically, the reaction takes air and hydrocarbons and converts them to carbon dioxide and water, nothing is destroyed.

Response: *We disagree. Processors that transform gasoline vapors by thermal oxidation can produce additional hazardous air pollutants in addition to what are already present in the gasoline vapors.*

ORVR (API, CIOMA, WSPA)

Comment 21: API requested confirmation of statements from the June 18, 2002 workshop regarding ORVR compatibility certification and implementation. The first statement was that ORVR compatibility is considered a "standalone module" and equipment can be certified as such. The second was that CARB will accept ORVR certification requests for pre-EVR equipment both before and after the April 2003 start date indicated in the EVR timeline.

Response: *The EVR Modules were created to group EVR standards which resulted in quantifiable emission reductions during EVR program development and represent a convenient way to identify the implementation dates of the EVR standards on the EVR timeline. Vapor recovery systems are not certified by module, but by certification standards and specifications. ORVR compatibility should not be viewed as a "standalone module" but as one of many vapor recovery certification standards. The ORVR compatibility standard is unique in that California state law mandates that all systems certified by CARB after January 2001 be compatible with fueling ORVR vehicles (H&SC 41954(c)(C)).*

New Phase II vapor recovery systems seeking certification before April 2003 are not required to meet EVR standards that become effective in April 2003. The exception is that all systems must meet the ORVR compatibility standard as required by state law as mentioned above. Note that systems that are not certified to EVR standards effective April 2003 will not be able to be sold or

installed in California as of April 2003. Pre-EVR certified Phase II vapor recovery systems may seek modifications to their Executive Orders to add ORVR compatibility before April 2005.

Comment 22: CIOMA believes that the current EVR implementation schedule forces early introduction of EVR Phase II systems. The practical effect of the ORVR full compliance date is to make a station owner that still has older vapor recovery equipment choose between purchasing equipment that will make his or her station compliant with ORVR requirements to use for two years before having to purchase all new equipment or simply purchasing all new equipment two years before EVR compliance is required. Some station owners may not have the choice since there may not be any equipment available to make his or her older vapor recovery equipment ORVR compatible.

Response: *The existing station owner has had several years already to comply with the ORVR-compatibility requirement. CARB-certified ORVR systems have been available since 1998. The standard for ORVR-compatibility became effective in April 2001, which was the start of the 4-year clock for this standard. At the request of petroleum marketers, ARB agreed to delay the ORVR-compatibility requirement for new installations until April 2003, so that new facilities would have the option of installing complete EVR Phase II systems.*

To maximize the station owner's options, we suggest you urge existing certified system manufacturers to certify to the ORVR-compatibility standard. ARB staff will provide guidance for certified system manufacturers seeking to add ORVR compatibility to their existing certification.

Comment 23: WSPA states that ARB staff indicated at the meeting that they are busy developing an ORVR compatibility test protocol to satisfy the requirements of EVR Module 3. WSPA is interested in the Module 3 certification process because all gasoline dispensing facilities (GDFs) in the state are currently required to have ORVR compatible vapor recovery systems by April 1, 2005. WSPA would like an explanation of how the interim EVR Module 3 certification process will be administered.

Response: *ARB staff is preparing ORVR compatibility guidance to assist in certifying existing certified Phase II systems for ORVR compatibility. Applicants may find the guidance helpful in preparing a protocol as required in section 4.4.3 of CP-201, Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities:*

> *4.4.3 The system manufacturer shall be responsible for developing a procedure by which compatibility can be demonstrated. This procedure is subject to engineering evaluation by the Executive Officer; if it is deemed inadequate and/or unusable, the certification application shall be deemed unacceptable.*

Each application for ORVR compatibility certification must include a test procedure that is appropriate for their system that demonstrates that the Phase II emission factor will not be exceeded when fueling ORVR vehicles for typical and worst case situations.

Nozzle standards (Husky, OPW, WSPA)

Comment 24: Husky comments that the spillage and drips caused by a nozzle are specific to the nozzle not the system and would not change from system to system. Nozzles could be tested for liquid retention, spillage, spitting and drips on any certified system, the fit in the nozzle pocket would have to be done on each dispenser. A system may also contribute to the spillage and drips separate from the nozzle. Example: A hose that is leaking fuel into the vapor path would show up as spillage at the nozzle, but is not a nozzle problem and could not be fixed by the nozzle.

Response: *The example given by Husky supports the need to test each vapor recovery system individually for spillage and other standards. Although staff commonly refers to liquid retention, spillage, etc, as nozzle standards, staff recognizes that equipment in the system other than the nozzle can indeed affect the test results for these standards.*

Comment 25: Husky's observation of drip testing indicates that the number of drips depends on the vehicle being fueled. The amount of fuel that remains on the outside of the spout and then drips off depends on the unleaded restrictor, how much fuel passed the restrictor and how it fit the nozzle spout. The same nozzle went from 0 to 15 drips depending on the vehicle it was fueling.

Response: *Staff agrees that a variety of factors, including the vehicle fueled, can affect the number of post-fueling drips. The post-refueling standard requires an average of 3 drops per refueling over a minimum of 100 fueling episodes to allow some variation for each fueling.*

Comment 26: OPW provided field test data showing that the new proposal of 3 drops average post-fueling drips is attainable and repeatable with today's technology. However, OPW finds some single tests have more than 10 drops due to factors such as fill pipe design. OPW suggests that the goals of EVR can still be met with the 3 drop average and requests that the 10 drop maximum be removed from the proposed revised standard.

Response: *We agree. The 10 drop maximum requirement will be not be included in the proposed revision of the post-fueling drips standard.*

Comment 27: OPW suggested several modifications to TP-201.2D, Post-Fueling Drips from Nozzle Spouts. The suggestions were made to clarify the procedure so that testing is consistent and repeatable.

Response: *Staff has included many of the OPW suggested modifications to TP-201.2D in the proposed EVR amendments.*

Comment 28: WSPA supports the 3-drip average over 10 refueling events with a maximum of 10 drops per event as the new Module 4 EVR nozzle certification specification. However, WSPA is concerned that field inspectors may inappropriately use the 3-drip certification criterion as a field compliance test method for purposes of enforcement. WSPA requests an advisory stating that the three-drop criterion and other nozzle certification criteria only apply to nozzles during certification testing.

Response: *Section 1.1 of TP-201.2D, Post-Fueling Drips from Nozzle Spouts, states that the procedure is applicable,* ***during the certification process****, for determining compliance with the performance standard with the maximum allowable number of liquid gasoline drips as defined in CP-201. Also, the 3-drop average represents results from at least 100 test runs (10 runs per nozzle with a minimum of 10 nozzles). The high number of runs does not lend itself well to routine compliance testing.*

Six-pack dispensers (WSPA)

Comment 29: WSPA applauds CARB for making it clear during the June 18th workshop that existing six-pack dispensers will be recognized in the EVR program. Staff stated that there would be only two criteria for approving/disapproving a six-pack dispenser for EVR: (1) acceptable pressure drop and (2) lack of liquid traps in its vapor piping inside dispenser. This approach will avoid the need to test components with every six-pack brand and piping configuration. WSPA recommends CARB develop specific guidelines to ensure how this determination be made and how this process is to be documented.

Response: *Staff stated that the two primary concerns about six-pack vs. unihose dispensers are the vapor piping and liquid traps. These are not the only criteria by which dispensers must be evaluated. Whether unihose or six-pack, the dispensers/nozzle compatibility must be evaluated, as well as the hose configurations that will be approved for a particular type of dispenser. That said, we are working on guidelines by which dispensers will be evaluated to determine that they are interchangeable with the type with which the system was tested.*

Comment 30: CARB staff mentioned that they will list existing six-pack dispensers in Executive Order equipment listings to assure their continued use

under the EVR program. WSPA would like to know how will this relate to the system certification? WSPA recommends that CARB include exemption language in the Executive Orders and in the CP-201 ISD Appendix.

Response: *Certification testing will be allowed on either unihose or six-pack. The type not used will be evaluated for compatibility and any failure/challenge mode testing deemed necessary will be conducted. The certification Executive Orders will specify that the system may be installed on unihose dispensers, or retrofitted on existing dispensers.*

EVR emission reductions (API)

Comment 31: API pointed out that calculations of emissions reductions for Modules 3 and 6 should be reduced 34% and 10% respectively based on correction use of ARB data and methodologies.

Response: *The emission reductions for ORVR compatibility (Module 3) will be reduced 28% by correcting the ORVR excess emission factor for the Wayne assist vapor recovery system. The annual statewide emission reductions for EVR ORVR compatibility will be presented in the EVR tech review as 4.5 tons/day as compared to the previous value of 6.3 tons/day. These are not tons/summer day, but are calculated using an average year-round uncontrolled emission factor of 8.4 lbs/1000 gallons. If the EVR emission reductions were only quantified for summer months with low RVP gasoline then it would be correct to use the summer uncontrolled emission factor of 7.6 lbs/1000 gallons as suggested by API's consultant. We thank API for bringing this to our attention, as the emission reductions for all the EVR modules will be revisited to ensure consistent use of the year-round emission factor of 8.4 lbs/1000 gallons.*

Staff agrees to adjust the emission reductions for In-Station Diagnostics (Module 6) to correct the equation cited in the April 1999 Draft ARB/CAPCOA Vapor Recovery Test Report. However, we were incorrect in adjusting the emissions reductions to the summer emission factor of 7.6 lbs/1000 gallons in Appendix D of the February 2000 EVR staff report. Using the corrected equation and the year-round emission factor of 8.4 lbs/1000 gallons leads to a slight increase in the ISD emission reductions; from 6.6 tons/day to 6.7 tons/day.

Cost analysis (CIOMA, WSPA)

Comment 32: CIOMA states that the latest cost effectiveness numbers are very high for low-volume stations and outrageously high for the lowest volume stations. These stations are usually located in more rural, isolated areas and are often the only retail gasoline outlet for many miles. Because of their low volume, they are not very profitable businesses, but they provide a very important service for their community. There is little or no money left to pay the costs of EVR and ISD after paying for all of the other regulatory mandates on these stations. Their

costs per station tend to be higher because they are generally only purchasing for one station and not a chain. Their emissions are lower because their sales volume is lower. Yet, they are being asked to pay nearly 8 times more per pound of emissions reduced for the lowest volume stations and nearly 5 times more per pound of emissions reduced for the second lowest volume stations than the highest volume stations. These costs will be even greater if only one Phase II system is certified and especially if that system has a limited certification. The lowest volume stations' costs will rise dramatically if they are required to have an ISD system because the only certified Phase II system requires an ISD system. The cost effectiveness of this proposal needs to be reexamined for the lowest volume stations.

Response: *We agree that the latest EVR cost analysis show higher costs for smaller stations and recognize the importance of maintaining retail facilities in rural areas. We are continuing to refine the cost analysis based on the latest information and promise to look closely at the cost-effectiveness of the EVR program for the low-throughput stations. Note that systems that are certified with ISD systems will also be certified without ISD systems for stations qualifying for the ISD exemption.*

Comment 33: WSPA points out that that currently there are only pre-EVR certified ORVR systems in existence, in the event these pre-EVR ORVR systems are installed and are found to be "incompatible" with approved EVR certified Phase II systems, these ORVR systems may subsequently need to be removed or modified to comply with the requirements of EVR Phase II.

Although WSPA believes it is unreasonable to require operators to install equipment that is obsolete and that does not effect the ultimate emission reduction goals of the EVR program, at a minimum, CARB should consider the expenses incurred by owners/operators in the event equipment described above is found to be incompatible in the EVR program.

Response: *This issue applies only to new facilities or facilities undergoing major modifications. Pre-EVR Phase II vapor recovery systems installed now are not required to be ORVR-compatible even though ORVR-compatible systems have been available since 1998. The delay of the ORVR-compatibility operative date from 2001 to 2003 was requested by WSPA at the time of the EVR amendments in March 2000. Operators of new facilities installed since the April 2001 EVR effective date made a business decision whether to install ORVR-compatible systems or not. If the choice was made to install ORVR-compatible systems in 2001, then the operator can continue use of their Phase II system until April 2007, thus providing 6 years of system use before upgrading to a fully compliance EVR system. These ORVR-compatible systems are not obsolete.*

A similar business choice is available now to those operators seeking to open new gasoline dispensing facilities prior to April 2003. The operator may choose a non-ORVR-compatible Phase II system with equipment manufacturers that are expected to offer a fully EVR-compliant system upgrade by 2005, or may choose an system that is ORVR-compatible now, knowing that the system may need to be significantly modified by 2007.

We ask WSPA to provide historical information on the number of new or modified gasoline dispensing facilities statewide for the last several months in order to estimate how many facilities are affected by this scenario.

Comment 34: WSPA believes that compliance costs for potential balance system compliance and the various vac-assist systems have been considered collectively and not separately. Additionally, the cost estimates for EVR should include the costs for adding processors to balance systems, whether attributed to ORVR compatibility or Module 2 pressure management. The tech review report indicated the potential need for processors with balance systems. WSPA would appreciate confirmation from CARB that both systems costs are considered independently and not combined. Also, WSPA requests making this cost information available.

Response: *The EVR cost analysis has from the beginning assessed costs for balance and assist systems separately. This can be clearly seen by examining the individual cost assignments for each GDF model size in Appendix 4 of the EVR Technology Review. For example, pages 8-9 of Appendix 4 provides separate vapor processor costs for balance and assist system as part of the Module 2 costs for GDF2 facilities. The processor costs have been included since the February 2000 Staff Report for both balance and assist systems.*

Comment 35: WSPA comments that the cost effectiveness for Modules 2 and 4 cited at the June 18th workshop were above the $11 per pound used by the Board as a basis for reasonable control costs. CARB staff mentioned that the cost effectiveness of all EVR Modules were averaged to provide a value representing the overall cost effectiveness of the EVR program. CARB staff also mentioned that this practice was common to many other emission control programs. WSPA requests a specific example of how this approach of combining emission controls has been applied in the past and how such an application is similar to EVR regulations. At a minimum, WSPA suggests that costs, emission impacts and cost effectiveness for each EVR Module be stated separately for balance and vac-assist systems to reflect the true impacts on the owners/operators of these two distinctly different systems resident at separate facilities.

Response: *The numbers listed above for each module are already stated separately on the Cost-Effectiveness Summary page of the EVR cost analysis released at the June 18th workshop. You can download the complete cost analysis spreadsheet at http://www.arb.ca.gov/vapor/regulatory.htm. The GDF module sheets already show the separate costs incurred for assist and balance systems for each module.*

All ARB regulations must include an economic analysis, including calculation of cost-effectiveness. Two examples are the consumer products amendments heard in June 2000 and the marine engines regulations heard in July 2001. The staff reports and cost analyses for these measures and many other ARB regulations can be accessed at http://www.arb.ca.gov/regact/regact.htm.

Comment 36: For purposes of fully evaluating their individual contributions to the ISD concept, WSPA requests the costs and potential emission impacts for each element/component proposed under ISD. This request for detailed ISD cost information would include more details on equipment, installation and maintenance costs associated with the following:

- Vapor collection monitoring
  - A/L ratio
  - Vapor collection flow
  - Central vacuum unit
- Vapor containment monitoring
  - UST ullage pressure
  - Phase I vapor transfer
- Vapor processor monitoring
- Electronic recordkeeping

WSPA also requests that CARB state ISD costs and emission benefits separately for balance and vac-assist systems as these costs affect separate types of vapor recovery systems at separate facilities.

Response: *As part of the EVR Technical Review Report, staff reviewed and attempted to quantify the emissions impacts from ISD components. Table II-15 quantifies emissions associated with four separate ISD components. A discussion of our Emission Estimates begins on page 32 of the report with references to Appendix 3. The ISD costs will be revisited if costs for balance and assist systems are found to be significantly different.*

Major Modification (API, WSPA)

Comment 37: API requests CARB to consider adding language to ensure an ORVR retrofit does not constitute a “major modification” and trigger the Module 2, EVR requirements.

Comment 38: WSPA requests language that would state that an ORVR retrofit or modification would not trigger the regulatory definition of "major modification" and thus trigger Module 2 EVR requirements

Response: *The definition of "major modification" was recently revised to read as follows:*

> ***major modification:*** *the modification of an existing GDF that makes it subject to the same requirements to which a new installation is subject.*
>
> *modification of the Phase I system that involves the addition, replacement, or removal of an underground storage tank, or modification that causes the tank top to be unburied, is considered a major modification of the Phase I system.*
>
> *modification of the Phase II system that involves the addition, replacement or removal of 50 percent or more of the buried vapor piping, or the replacement of dispensers, is considered a major modification of the Phase II system. The replacement of a dispenser is not a major modification when the replacement is occasioned by end user damage to a dispenser.*

This Phase II major modification definition will not result in triggering Phase II EVR when systems are upgraded to be ORVR compatible.

Piping (WSPA)

Comment 39: CARB is developing a definition for "rigid pipe" for underground applications. WSPA urges CARB to maintain consistency with the State Water Resource Control Board underground tank regulations. WSPA would also like to be involved with CARB staff in the development and specification process for this important vapor recovery system component.

Response: *ARB and SWRCB staff are working together to ensure the "rigid piping" definition does not lead to a conflict between air and water board requirements. We appreciate any input from WSPA in developing the "rigid piping" definition.*

SUMMARY OF EVR TECH REVIEW COMMENTS

RECEIVED AFTER RELEASE OF DRAFT EVR TECH REVIEW REPORT ON APRIL 2, 2002 (comments received as of May 30, 2002)

Comment letters, faxes, e-mails received from:

1. Butte County AQMD (Butte)
2. CAPCOA Vapor Recovery and Enforcement Managers (CAPCOA)
3. CIOMA
4. Gilbarco
5. Glenn Co. APCD (Glenn)
6. Hirt
7. Lake County AQMD (Lake)
8. OPW
9. Veeder-Root
10. WSPA

TOPIC INDEX:

Comment #

EVR Schedule (Lake)

Comment 40: Lake urges ARB to delay EVR implementation for several years for districts that are in ozone attainment and are not identified as transport sources. Less urgent implementation will provide the opportunity to assure smaller-volume station operators that the new EVR systems (both diagnostics and equipment) are available, proven, competitively priced and compatible with ORVR and the basic existing configurations. Also, it may be impossible to implement EVR statewide using the proposed schedule, given the lack of certified equipment.

Response: *S*taff is considering a proposal to allow existing service stations in districts that are in attainment with the state ozone standard to continue use of currently installed Phase I and Phase II vapor recovery equipment. These gasoline dispensing facilities would be exempt from Enhanced Vapor Recovery (EVR) requirements to upgrade Phase I systems by April 2005, upgrade Phase II systems by April 2007 and install in-station diagnostic systems by April 2008. However, new facilities and existing facilities that undergo a major modification as defined in D-200, would be required to meet Enhanced Vapor Recovery requirements.

EVR Alternatives (WSPA)

Comment 41: WSPA is concerned with the relative lack of EVR alternatives that were considered and evaluated by CARB in the tech review. WSPA believes the six alternatives presented in the report do not adequately provide a thorough and rigorous review of alternative efforts towards meeting EVR goals as directed by the Board. WSPA would like a more flexible EVR program that would provide incentives for equipment manufacturers to meet stringent EVR requirements without compromising the overall emission goals.

Response: *Staff evaluated all alternatives proposed by stakeholders. As stated on page 4 of the EVR Technology Review, staff did not investigate alternatives to standards characterized as feasible.*

ISD (Butte, CAPCOA, Glenn, Veeder-Root)

Comment 42: Butte County notes that the ISD exemption level is proposed to be increased from 160,000 gal/yr to 300,000 gal/yr. Butte County feels the cost of ISD is burdensome and will likely drive some local operators out of business. Butte County suggests a 2-tiered approach for ISD:

1. New stations with > 300,000 gal/yr annual throughput
2. Existing stations with > 600,000 gal/yr annual throughput

This suggested throughput exemption represents the upper level of GDF2, but still exempts only 5.9% of the total annual gasoline throughput, or 18.8% of the service stations.

Response: *The proposal to exempt GDF2 stations from ISD will result in 0.45 tons/day increase in emissions, or 5.3% of the total emission reductions attributable to ISD. Staff will review a possible increase in the ISD throughput exemption, in conjunction with the ISD cost-effectiveness for GDF2 stations as part of the December 2002 EVR amendments.*

CAPCOA and Glenn have the following recommendations to improve the enforceability, therefore the practicality, of ISD. CAPCOA is concerned about the cost of ISD, especially for smaller stations in rural areas.

Comment 43: ISD should produce A/L results that are equivalent to the underlying Executive Orders and test procedures. Change the regulation to make the goal of ISD equivalent to reverification testing. This would eliminate the "gray" zones of "marginal non-compliance".

Response*: ISD is intended to be a diagnostic tool. ISD was never intended to be equivalent to Continuous Emission Monitors (CEMs) to which the air pollution control community is accustomed. The purpose of ISD is to provide a continuous system monitor primarily for the equipment owner so that equipment can be maintained at the highest level possible. In order to accomplish the purpose of ISD, false positive and negative signals must be minimized while ensuring that most common component failures are appropriately identified. As a result, ISD is not designed to be, nor does it function at levels equivalent to, enforcement test procedures.*

As an example, ISD is designed to issue a system warning when a specific assist system nozzle falls below a certain level (0.68 a/l ratio for a system certified to operate at no lower than 0.90 a/l) for a minimum of 15 dispensing events. It is true that a district may conduct an official a/l test and find the nozzle out of compliance at 0.89 a/l while the ISD indicated no failures. ISD is intended to identify a gross a/l failure, one that would result in significant emissions if not repaired quickly. ISD is not intended to prevent districts from taking necessary enforcement action when systems are found out of compliance. ISD is intended to give the station operator a diagnostic tool that will maximize the continuous operation of vapor recovery equipment at a high level of performance.

Comment 44: Tighten the "no violation" ranges and mandate "action" by station operators within these ranges. Make lack of corrective action when a system is outside of the certified range, a violation, defect, etc. if not completed in a specified period of time (e. g., 1hr., 24 hrs. or 72 hrs.)

***Response**: See above. A system failure as identified by ISD is not intended to be enforceable. However, a lack of response by the station operator to an ISD signal can and should be subject to enforcement action.*

Comment 45: To avoid the possibility of tampering with settings and alarm history, require onsite electronic storage of ISD data and monthly printouts of alarms and other key data for backup storage at stations. The ISD systems must be tamper-proof.

Response: We agree. Requirements are already included to prevent tampering and for extensive data storage. A vast array of reporting capabilities exist and should be specified by individual districts to meet their specific needs. If additional capabilities are needed, the ARB will work with districts to incorporate such requirements in the applicable Executive Orders.

Comment 46: Require auto-shutdown of parts or all of stations for gross failures – at the start of the implementation period if not later. Allow some discretion in enforcement and shutdown provisions for rural districts where justified.

***Response:** We agree and have provided for shutdown because of gross failures. Re-start of systems is being left to the discretion of districts since rural district needs may be quite different than urban district needs. We are willing to work with CAPCOA if additional requirements are believed necessary.*

Comment 47: Extend the implementation period by two additional years for ISD at smaller stations allows more time for ISD technology to become more reliable and less costly. Small stations with throughputs of less than 300,000 gallons per year are exempt from ISD Full compliance with ISD for stations with throughputs between 300,000 and 1,800,000 gallons per year is not required until 2008. Further delay is unwarranted unless it can be justified on a cost-effectiveness basis.

***Response:** Small stations with throughputs of less than 300,000 gallons per year are exempt from ISD Full compliance with ISD for stations with throughputs between 300,000 and 1,800,000 gallons per year is not required until 2008. Further delay is unwarranted unless it can be justified on a cost-effectiveness basis.*

Comment 48: Develop lower-throughput station alternatives to ISD such as flow direction/no flow switches or monthly compliance testing. Work with CAPCOA to develop these alternatives. Then raise the exemption level for full ISD to 75,000 gallons per month.

***Response:** Further relaxation of the ISD requirements will not be considered unless it is based on cost-effectiveness. A continuous monitoring system like ISD would be more effective in reducing hydrocarbon emissions than alternatives, which use discrete testing like monthly compliance testing. The question is whether or not ISD meets minimum cost-effectiveness requirements*

at lower throughput levels. The ARB staff will re-investigate all ISD costs and resultant cost-effectiveness numbers before presenting its information to the Board for its consideration.

Comment 49: Ensure all ISD system(s) available are compatible with a minimum of 90% of UST electronic systems installed in last 10 years. Provide more time or other alternatives where compatibility is an issue. Perform a "compatibility" study once at least one ISD system is under-going certification.

Response: *We do not believe that it is realistic to require manufacturers to produce ISD systems that are compatible with other competitors electronic systems. Our understanding is that an ISD vendor would integrate the ISD electronics with its own existing electronics and with competitor's electronic system to the extent practicable. However, stand alone ISD electronics will be used where there are compatibility issues. Such costs will be considered in ISD cost-effectiveness analyses.*

Comment 50: ISD should provide all data necessary to determine the magnitude of failures (not just "pass/fail" information).

Response: *See above. All data collected by the ISD system can be printed or downloaded onto a laptop computer. We reemphasize that such data is not intended to be used as a basis for enforcement action.*

Comment 51: Define exactly how VR systems (particularly assist systems) will work with the current non-ORVR compatible equipment.

Response: *This recommendation is unclear. ISD will only be applicable to EVR systems and by definition, all EVR systems will be ORVR compatible. ISD systems are required to be able to identify system failures at varying levels of ORVR penetration. Specific details on how the vapor recovery system will work with ORVR and non-ORVR vehicles will be described in the certification application. CAPCOA will have an opportunity to comment on the approach when assisting ARB in the review of the certification application.*

Comment 52: CIOMA notes that although the tech review report indicates that the status for ISD is mostly a "Yes" with one "Likely" for self testing, we believe that a less comprehensive system should still be considered. It was our understanding that other types of systems would be considered, but with the standards in writing in the Appendix, we believe that potential manufacturers were discouraged from going to the expense of developing something that did not meet all of the criteria listed. A simpler, less expensive ISD system which does not meet all of the criteria in the Appendix could still meet the goal of ISD to ensure that the vapor recovery system is functioning. CIOMA remains concerned about the cost and availability of Phase II and ISD equipment when it is mandated. We believe that a less elaborate ISD system would meet the goal of ISD and cost less.

Response: *Less comprehensive solutions such as the EnviroSentry were considered as part of the Technical Review. Staff also developed a manual alternative table that uses currently approved test methods. For those evaluations, the emission goals of a complete ISD were not met.*

Comment 53: Glenn maintains that all stakeholders agreed that ISD is a non-invasive, passive system. If this is true, then one certification only would be needed for balance, assist and processor-based systems.

Response: *ISD system performance may not be completely independent of Phase II system type. We are proposing that ISD systems be certified by "system type", which will ensure that the ISD systems work properly with different kinds of Phase II systems.*

Comment 54: Veeder-Root notes that as ORVR vehicle penetration rises to 80% and beyond, the number of non-ORVR dispensing events becomes small relative to ORVR events. For dispensers whose vapor flow is blocked during ORVR events such as balance dispensers or assist with ORVR sensing systems, the number of remaining unblocked events on which ISD must make a determination of either Flow Performance (CP201 Appendix 2.1.2) or A/L ratio (CP201 Appendix 2.1.1) becomes small. This reduces accuracy and can prevent ISD from meeting the required performance standards. If ISD is required to perform at these high levels of ORVR vehicle penetration, we suggest a remedy to this situation by changing the definitions of the allowed number of dispensing events as follows:

2.1.1 Air/Liquid (A/L) Ratio Monitoring

2.1.1.2. Malfunction Criteria **B** Gross Failure

From: A..., based on a minimum of 15 dispensing events, ...@

To:A..., based on a minimum of 15 dispensing events (or if vapor flow is blocked by design of the vapor recovery system during ORVR vehicle events, a minimum of 15 total and 5 non-ORVR dispensing events), ...@

From: AIf fewer than 15 dispensing events occur in a day, the ISD system may accumulate events over an additional day or days until a minimum of 15 is reached.@

To:AIf fewer than 15 (or 15 total and 5 non-ORVR) dispensing events occur in a day, the ISD system may accumulate events over an additional day or days until a minimum of 15 (or 15 and 5) is reached.@

2.1.1.3 Malfunction Criteria - Degradation

From: A..., based on a minimum of 30 fueling events, ...@

To:A..., based on a minimum of 30 fueling events (or if vapor flow is blocked by design of the vapor recovery system during ORVR vehicle events, a minimum of 30 total and 10 non-ORVR dispensing events), ...@

From: AIf fewer than 30 dispensing events occur in a week, the ISD system may accumulate events over an additional day or days until a minimum of 30 is reached.@
To:AIf fewer than 30 (or 30 total and 10 non-ORVR) dispensing events occur in a week, the ISD system may accumulate events over an additional day or days until a minimum of 30 (or 30 and 10) is reached.@

2.1.2 Vapor Collection Flow Performance Monitoring
2.1.2.2 Malfunction Criteria
From: A..., based on a minimum of 15 dispensing events, ...@
To:A..., based on a minimum of 15 total and 5 non-ORVR vehicle dispensing events, ...@
From: AIf fewer than 15 dispensing events occur in a day, the ISD system may accumulate events over an additional day or days until a minimum of 15 is reached.
To:AIf fewer than 15 total and 5 non-ORVR vehicle dispensing events occur in a day, the ISD system may accumulate events over an additional day or days until a minimum of 15 and 5 is reached.

***Response**: Staff believes that it is appropriate to change the 15 dispensing events to 15 non-ORVR dispensing events.*

Comment 55: Veeder-Root notes that Appendix 2 p.2 of the tech review report states:

Monitor and assess UST ullage pressure data
... AIf the excessive Phase I UST ullage pressure test fails, the ISD system should:@ ... A(4) Prohibit dispensing to affected fueling points; (5) Provide the ability to re-enable dispensing; and (6) If reenabled, record the event.@

However, the CP201 ISD Appendix does not require that any fueling points be shut down in the event of a failed Phase-I delivery. This makes sense because shutting down dispensing will have no affect on improving the failed Phase-I problem. Sections (4) through (6) should be removed.

***Response:** Staff agrees that excess pressures during a Phase I delivery is not justification for shutting down dispensing points.*

Comment 56: Veeder-Root comments that the test standard contained in section 2.2.1.4 of the ISD appendix is too vague. Section 2.2.1.4 provides the malfunction criteria for pressure integrity as:

...AThe ISD system shall assess, on a weekly basis, when the EVR system vapor space leaks at a rate which can be represented by an orifice which leaks at 2 times the allowable CARB tight system standard in TP-201.3@...

This section requires an orifice to be set to a leak rate related to the TP-201.3 standard. But that standard does not explicitly state leak rates. Instead it provides mathematical functions of pressure versus time with various specific time constants along with tables of pressures derived from the functions. The ISD standard requirement is for ISD to detect a leakage path or paths of a total size represented by an orifice of a specific size. The size is that which leaks at twice the rate represented by each TP201.3 pressure function.

In practice, during any certification test of ISD, an orifice must be created with a specific hole size. A reasonable way to determine the correct size is to flow vapors through the orifice while setting a pressure of 2 inches of water column across the orifice. The volume flow rate can be measured using a Roots meter or similar volume flow test standard. The orifice is of correct size when the volume flow rate at 2 inches of water column is equal to each initial flow rate derived from each of the TP-201.3 pressure versus time functions (at time zero). We recommend that a table of these initial volume flow rates should be calculated and added to this ISD Appendix section. They should be rounded to the values as follows:

Number of Hoses	Balance Dispensers	Assist Dispensers
1-6	12.0 cfh	8.0 cfh
7-12	12.5 cfh	8.5 cfh
13-18	13.0 cfh	9.0 cfh
19-24	13.5 cfh	9.5 cfh
>24	14.0 cfh	10.0 cfh

Response*: While Veeder-Root believes the approach is too vague, it is the ARB's intention to provide flexibility in meeting the leakage performance standard. Therefore, the section shall be changed to read "The ISD system shall assess, on a weekly basis, when the EVR system vapor space leaks at a rate 2 times the allowable CARB tight system standard in TP-201.3"*

Comment 57: WSPA strongly recommends CARB develop an ISD Policy that provides specific guidance to CAPCOA and local air districts regarding the goal of ISD, which is to evaluate the reliability and performance of EVR equipment, and not strictly an enforcement tool.

Response: *ARB staff has made the intent of ISD clear at public workshops and CAPCOA meetings. ARB staff will continue to work with the districts regarding ISD enforcement policy.*

Comment 58: WSPA would appreciate the opportunity to review the data gathered by CARB during the ISD pilot program.

***Response**: Data that was collected during the pilot program can be made available for review.*

Comment 59: WSPA questions the need for an RS232 port and remote access capability. WSPA requests specific clarification as to the intent of this requirement with respect to the primary goals of ISD.

***Response:** The RS232 port for remote access is seen as an industry standard that will allow downloading of the data to many different platforms. The collection, reporting, and access to data does not insure that vapor recovery system operates as designed, however, it does provide information which is critical to understanding past performance, maintenance diligence, and performance trends of the system. Combined, this information will help meet the ISD goals.*

Comment 60: WSPA notes that ISD systems must store monthly reports for a period of 24 months despite a loss of power. However, Veeder-Root TLS-350 systems cannot collect data during a power failure. WSPA recommends revision of the Loss of Power section to reflect this.

***Response:** Power failures to ISD equipment should coincide with power failures at the service station and therefore no gasoline dispensing is expected to occur during those periods. The Tampering Protection section will be modified to insure that the systems are designed and installed so that the station can not dispense fuel unless the ISD system is operating. Staff will also work with ISD manufacturers to verify that power outages can be identified.*

Comment 61: WSPA notes that table II-10 contains A/L ratio comparison data for December 7, 2001. However, the ISD pilot sites were operated for several months. WSPA is curious why the A/L comparison was limited to just one day.

***Response:** The data on December 7, 2001, was presented as representative data from one test. Table II-11 gives a summary of 78 A/L tests that were performed with results similar to those on December 7, 2001. The detailed A/L results can be made available.*

Comment 62: WSPA would like clarification on how ISD-indicated failures were confirmed (less than 1% false alarm requirement) and how the ISD systems were tested to ensure actual problems were detected (detect failures > 95% of time requirement).

***Response:** Using statistical analysis of the data collected, it was determined that the detection levels could be met.*

Comment 63: WSPA would like to review all relevant information and data collected that demonstrated the pilot ISD system performed as required by the ISD appendix. The data in the Technical Review appears to be non-quantitative and thus insufficient to base an appropriate feasibility conclusion. For example, there were references made at the site where hoses entrained with fuel were properly identified by the ISD system. WSPA believes that a TP-201.4 test should have been performed on these fueling positions and compared to the flow performance indicated by the ISD system to determine proper statistical compliance with this requirement.

Response*: Data was collected per the section 2.0 of the Draft ISD Pilot Program Performance and Cost-Effectiveness Protocol. As part of the protocol, TP-201.4 is performed and compared to the ISD readings.*

Comment 64: WSPA agrees with staff that the influence of ORVR equipped vehicles could cause nuisance alarms with the vapor collection requirements of the ISD appendix. WSPA is skeptical that averaging 15 fueling events per fueling position will adequately address this concern.

Response: *The systems are required to correctly assess failures while maintaining less than 5 percent nuisance alarms. This capability will be tested and verified during the certification process.*

Comment 65: WSPA would alike additional information on how the referenced ISD system was able to detect excess gaps between the vehicle fill pipe and nozzle boot face seal.

Response: *The ISD systems are not required to detect excess gaps between the vehicle fill pipe and nozzle boot face seal.*

UST Pressure Standard (Butte)

Comment 66: Butte County notes that page 8 of the Tech Review Report states the “likely” prospect of requiring a processor. It is not clear if CARB is proposing processors be retrofitted on existing balance systems, or if the suggestion of “likely requirement” is intended for new installations only. Please clarify in the final report.

Response: *Both new and existing systems will be required to meet the UST pressure requirements. New systems must comply beginning in April 2003. Existing systems have until April 2007 to meet UST pressure limits. Processors may be necessary for balance systems to ensure limits are met during non-operational periods of the station.*

Maximum A/L of 1.00 for system without processor (Gilbarco, WSPA)

Comment 67: Gilbarco had previously requested that development of an assist system pressure drop budget would be needed to assure this standard could be met. Gilbarco has withdrawn their request as several EVR nozzles have already been designed and the allowable ISD tolerance for A/L will accommodate the variation that currently exists in vacuum assist hanging hardware.

Response: *No assist system pressure budget will be included in the December 2002 EVR amendments.*

Comment 68: WSPA recommends that maximum A/L ratios be established during the certification process for each system. The maximum A/L ratio should be based on the system specific failure mode risk. Has staff reconciled the maximum A/L designated against the maximum hydrocarbon to processor limitation? This change could result in a more efficient ISD solution to meeting the vapor collection component of the ISD appendix.

Response: *The A/L range for each system will be established during the certification process. The actual failure mode risk cannot always reliably be established during certification testing and only becomes apparent after a number of systems have been in service for longer periods of time than the certification test. The maximum A/L limit of 1.30 for systems with processor was established to ensure that, in the event of complete failure of the processor, the emissions will not exceed 50 percent of the emissions from an uncontrolled system.*

Phase II Emission Factor and Pressure-related fugitives (Hirt, Veeder-Root)

Comment 69: Hirt agrees with the suggestion to standardize the calculation of pressure-related fugitives to the largest allowable leak rate. Hirt notes that the largest leak occurs when the fill elbow is connected to the vapor adapter, before connecting the vapor hose to the truck, resulting in a 3-inch diameter hole.

Response: *The largest <u>allowable</u> leak rate is that maximum leak rate that complies with the criteria in CP-201, when measured in accordance with TP-201.3. A system with a 3-inch hole would not comply with this criterion.*

Comment 70: Veeder-Root comments that pressure-related fugitives calculations should not be based on a combination of the largest allowable leak and actual pressure levels measured during a test period if the actual leak is significantly lower than the allowable limit. This is not a reasonable approach because leak conditions significantly influence pressure levels. If a leak level at the allowable limit is assumed in a worst case analysis, pressure levels would be heavily biased closer to zero gauge pressure and not be the same as measured during an actual test on a tighter system.

Response: *Assuming the worst case would require standardization of the conditions. In other words, the pressure would be measured when the maximum allowable leak rate was occurring. It may be necessary to introduce a controlled leak to achieve this. The goal is to fairly ensure that a test station with positive pressure and a zero leak rate not cause a system to be characterized as having zero fugitive emissions, while in fact the system will be installed in stations with a higher leak rate.*

Balance system component pressure drops (Veeder-Root)

Comment 71: Veeder-Root has previously requested inclusion of a pressure allowance for an ISD vapor flow sensor in balance dispensers in order to perform the tests required of ISD. To date none has been allowed. Veeder-Root suggests that 0.05 inches of water column at 60CFH be added to the existing pressures for other components which brings the total from 0.35"WC to 0.40"wc. If none is allowed, the combination of components which can be part of an EVR/ISD system will be significantly restricted to only those few operating well below their respective allowed pressures.

Response: *We are opposed to increasing the total allowable pressure drop. As stated in CARB's letter to vapor recovery equipment manufacturers and stakeholders dated January 24, 2002, CARB encourages the design of balance system components with lower dynamic pressure drop than the maximum allowed to avoid exceeding the total pressure drop when certifying with ISD.*

Nozzle/dispenser compatibility (WSPA)

Comment 72: WSPA requests clarification regarding how nozzle/dispenser compatibility will be determined for the various types of six-pack dispensers which will be allowed to remain in service with EVR Phase II systems and how that information will be made available.

Response: *The requirement for compatibility between nozzle and dispenser was developed to address the problem that some dispenser housings are designed with one type of nozzle in mind, while another type may be installed. For example, some balance nozzles are longer than conventional nozzles and some other balance nozzles. When the housing is sized for a shorter nozzle, and a longer nozzle is installed, the vapor valve of a balance nozzle can be held open. The wear and tear on the bellows and faceplate is also increased when customers force the nozzle into a too-short housing. One dispenser manufacturer has responded by providing a housing that can be adjusted to accommodate the any type of nozzle. Most existing dispensers are compatible with at least some of the nozzles. If the dispenser housing is not adjustable, it may be necessary to change to a nozzle of a different length to achieve compatibility. We are willing to work with WSPA, dispenser and nozzle*

manufacturers and other interested parties to identify the compatible combinations.

Processor system standards (Hirt)

Comment 73: Hirt takes exception to language in the tech review report that suggests that a complete redesign of their system is necessary to meet EVR standards. Hirt states that their system does indeed meet the maximum A/L of 1.3 and the maximum hydrocarbon flowrate to the processor of 5.7 lbs/1000 gallons.

Response: *Changes to the tech review report have been made as suggested by Hirt.*

ORVR (WSPA)

Comment 74: WSPA recommends that the final compliance date for ORVR Compatibility be extended from April 2005 to April 2007. This would make Module 3 consistent with the phase-in period for Module 2, EVR Phase II. The current April 2005 date removes two years from the time that station operators would have to purchase and install certified Phase II systems.

Response: *The ORVR compatibility requirement was originally proposed in February 2000 to be applicable to new facilities in April 2001. The operative date was modified at the March 2000 Board meeting to be April 2003. We are opposed to any further delays in the ORVR-compatibility requirement which are estimated to contribute 4.5 tons/day in terms of 2010 ROG emissions.*

Comment 75: WSPA notes that the ORVR two-year compliance period is in conflict with California Health and Safety Code Section 41954 (g)(2) that allows operators to operate a system for four years after any stricter procedures or performance requirements become effective.

Response: *As provided in Table 2-1 of CP-201, the effective date of the ORVR compatibility standard is April 1, 2001. Thus, the four-year grandfather period provided in state law began April 1, 2001. Note that certified ORVR-compatible Phase II systems have been available since 1998.*

Nozzle standards (OPW, WSPA)

Comment 76: OPW recommends an average of less than or equal to five drops over 100 test runs. This recommendation is based on field testing on automobiles. OPW also suggests clarification to TP-201.2D, the test procedure to measure drops (see comments under “Test procedures”).

WSPA supports staff's recommendation to increase the number of allowable nozzle drips and suggests the new criteria be established as soon as possible to encourage immediate submission of nozzles for certification by interested manufacturers.

Response: *Staff is proposing an average of 3 drops as the revised post-fueling drips standard.*

Unihose (Hirt, WSPA)

Comment 77: The decision for the unihose configuration should be left up to the GDF operator. Otherwise, since fewer nozzles mean less potential leak points, facilities should be limited to 8 nozzles or less. With ISD available to detect leaks, the number of nozzles is irrelevant.

Response: *As stated on page 9 of the tech review report, the unihose configuration reduces the number of hoses, nozzles and other hanging hardware by two-thirds, which also reduces the potential for leaks associated with this equipment. Non-unihose dispensers installed before April 2003 may continue to be used, but must meet other EVR Phase II requirements by April 2007. ISD systems will detect gross leaks in system equipment.*

Comment 78: WSPA requests clarifying language to ensure the six-pack hose configurations that are allowed under the adopting resolution will be approved under the EVR program. This would ensure equipment manufacturers recognize that the six-pack hose configuration be considered when certifying EVR Phase II systems.

Response: *Section 4.11 of CP-201provides for continued use of dispensers installed before April 2003. Modifications to CP-201 are proposed to allow Phase Ii certification tests to be conducted on six-pack dispensers.*

Cost Analysis (Butte, Glenn, Lake, Veeder-Root)

Comment 79: Butte notes that page 40 of the Tech Review Report states that "the costs for field tests such as leak decay, A/L and dynamic backpressure are already part of the vapor recovery requirements and do not represent additional costs for EVR". This statement is not correct for Butte County, who only require testing specified in the system Executive Order. 70% of Butte County stations are balance and not currently required to conduct annual testing. The EVR cost for annual testing must be included in the final EVR cost analysis.

Response: *We concur that many districts do not currently require annual testing for balance systems. We will include costs for balance system testing in the EVR cost analysis.*

Comment 80: Glenn observes that the ISD costs are provided by a single source vendor and are now two to three times the ISD costs in the original EVR staff report. If ISD allows 25% degradation from the Executive Order A/L ratio and 75% before a gross failure is determined, the emission reductions are much reduced and the cost-effectiveness figure skyrockets.

Response: *The ISD costs in the original EVR staff report issued in February 2000 were estimates by ARB staff. The higher costs in the EVR Technology Review represent realistic costs as supplied by the ISD manufacturer. As described in the tech review report, the emission reductions attributable to ISD have increased from 6.6 tons/day to 8.5 tons/day, even after correcting for the A/L variation noted above. This is because the original EVR staff report contained emission reductions for assist systems only, while the tech review report includes more recent data on balance system performance. The cost-effectiveness does increase based on these adjustments, but is still reasonable for most GDFs.*

Comment 81: CIOMA members and their customers generally have one or perhaps a handful of gasoline stations. Smaller companies tend to have the greatest difficulty getting the equipment they need when there is a shortage. And, smaller companies that are buying in small quantities tend to have to pay more for their equipment. We would like to see ARB staff calculate the differences between what a large company and a small company pays for their equipment today with vapor recovery. Those differences in cost will undoubtedly be carried over to EVR and ISD and should be figured into the cost and cost effectiveness of Phase II and ISD.

Response: *We agree that larger companies may enjoy cost savings on equipment purchases due to ability to buy "in bulk". However, the EVR cost analysis is based on full list price to ensure a conservative cost analysis that reflects the highest cost that any station would pay.*

Comment 82: Lake comments that imposing EVR in rural areas is not cost-effective compared with other opportunities to obtain emission reductions in the near future, especially for small-throughput stations that comprise the vast majority of their reactive organic gas (ROG) sources. A higher limit for triggering the EVR requirements should be seriously considered.

Response: *We recognize that small gas stations are less able to recover costs of upgrading equipment, when compared to large throughput stations. The EVR cost analysis has been designed to assess cost variations for stations in five throughput ranges. Stations with annual throughputs of less than 300,000 gallons have been exempted from ISD based on cost-effectiveness calculations.*

Comment 83: Veeder-Root has gained experience installing 9 sites with ISD equipment and have been improving the equipment as well as working with

dispenser manufactures in order to reduce the installation costs. We now estimate that retrofit install costs are significantly less than the original staff estimate of $1280 per dispenser and new install costs are lower than retrofit. We suggest that the staff estimate be rolled back to more realistic numbers. Also, the install costs should be broken out into two line items: base install costs and per-dispenser install costs. New and retrofit costs are estimated as follows at $55 per hour:

	Base	Per Dispenser	Example GDF 3
New	$ 250	$125	$250+3x$125=$625
Retrofit	$300	$200	$300+3x$200=$900

Response: *The ISD installation costs have been adjusted as suggested. The higher retrofit costs have been used in the cost analysis for all stations.*

Comment 84: Veeder-Root notes that annualized R&D and Cert. & Testing costs are included as separate line items in each of the Module 1 through 6 sections. These are costs that are born by the vendor and passed on to the consumer via the sales price of the EVR/ISD systems. The line item above these two items, AAnnualized Equip Costs...@, is based on estimates of equipment sales prices. Veeder-Rootes estimated prices for Module 6 given to the staff earlier this year included allowances for the R&D, certification and testing costs. Therefore, these amounts have been counted twice in this spreadsheet. The separate line items for R&D and Cert. & Testing should be removed and the total costs of Module 6 reduced appropriately for each of the five GDF category columns. Other costs throughout appendix 4 based on these costs should be adjusted to reflect the lower amounts.

Response: *We agree that the methodology may involve some cost overlap for Module 6. Adjusting the costs as Veeder-Root suggests would reduce the ISD only cost-effectiveness by 5-13% depending on GDF category. For example, GDF2 ISD cost-effectiveness would change from $9.10 to $7.92 based on latest calculations.*

Comment 85: Veeder-Root notes that the tech review report assumes an ISD maintenance/calibration/repair cost of $1200 per year. It is the same for all GDF throughput categories (1 through 5). In fact, these costs are dependent upon amount of equipment at the sites, especially number of sensors. It is therefore more accurate to provide annual maintenance costs based on number of sensors. Veeder-Root estimates AAnnualized maintenance/calib/repair@ costs for Module 6 as follows:

Sensors - A/L: Inspect, service, replace as needed	$300
Sensors - Pressure: Inspect, calibrate, replace as needed	$200
Datalogger - Inspect, replace modules as needed	$50

Response: *We agree that the annual costs for maintenance, calibration and repair will vary depending on the amount of equipment. The changes suggested have been made.*

EVR certification (CAPCOA, CIOMA, WSPA)

CAPCOA recommends the following incentives to alleviate the likelihood of insufficient certified and reliable equipment and improve the certification process.

Comment 86: Expedite/simplify application process for research projects.

Response: The ARB routinely and expeditiously approves "research and development (R&D)" status to legitimate applications. Over the last eighteen months we have approved 12 R&D test sites. An application for test site status is normally processed and usually granted within a few weeks. Our concern is with the use of test or research site designation when a proponent is attempting to circumvent district permit requirements or attempting to market an uncertified system.

Comment 87: Provide grants for certification or development of promising concepts or areas where consumer (industry) options are deemed limited. R

Response: The ARB already has the Innovative Clean Air Technology (ICAT) grant program in place. This program is administered by the ARB Research Division and was developed explicitly for the purpose of furthering promising air pollution control concepts in order to bring them into production.

Comment 88: Create a CARB staff position whose job is to stimulate earlier entry of manufacturers in critical need areas.

Response: We do not believe that stimulation is needed to have manufacturers address EVR regulations. As stated above, using Phase I as an example, there is no lack of interested manufacturers willing to pursue certification, merely a lack of product that meet the certification standards. ARB staff is continuously in contact with a myriad of both Phase I and Phase II equipment manufacturers. Interest is not an issue since California is a huge vapor recovery equipment market and ARB certification is required in many other states and countries. The issue really is having equipment capable of meeting the EVR quality requirements.

Comment 89: Require a minimum of 300,000 or 400,000 gallons/month throughput for stations used as test sites. This would provide a more realistic "extreme" case in a market where many stations exceed 500,000 gallons/month. You could build in some flexibility for special cases, like remote fills that generally involve low volume situations.

Response: Finding stations willing to be certification sites, even at the present minimum requirement of 150,000 gallons per month, has been very difficult. We

have contacted WSPA and CIOMA requesting their assistance in finding willing service station operators with only limited success. At the October 2001 and again in the April 2002 CAPCOA Vapor Recovery Committee meeting, we asked districts to provide us with service stations types by throughput. To date, we have received only two responses. The certification process does place additional burdens on the operation of service stations leading to this reluctance to participate. Raising the minimum requirement would only exacerbate the existing problem. The EVR regulations allow for failure mode testing, which can include testing to simulate either higher or lower throughputs. We fully intend to test all systems under conditions, which may lead to failure. It should be noted that minimum throughput may be more critical for membrane processor systems than maximum throughput while the opposite may be true for thermal oxidizer processor systems. We trust that the CAPCOA representative assigned to specific system certification tests will work with us to design and implement appropriate failure mode testing.
We recognize that remote fill applications may apply to low throughput stations. In this regard we have told applicants that we would consider test sites with a throughput of less than 150,000 gallons per month as long as they agreed to a throughput limitation in the Executive Order.

Comment 90: Expand the number of potential test sites by raising or eliminating the current 100 mile-from-Sacramento limitation.

Response: We are willing to consider certification sites outside of the current 100 mile limit and presently have a certification site in Salinas. From a practical standpoint, we are reluctant to have many such sites because it prevents us from keeping the high level of vigilance we believe is required to ensure the necessary stringency of the certification process.

Comment 91: Take a proactive view of why failures are occurring. Require manufacturers with components of questionable durability to perform less costly life-cycle testing prior to seeking certification.

Response: *The EVR regulations require testing prior to submittal of systems for certification. Additionally the ARB has taken a very proactive approach with equipment manufacturers before, during and after certification testing. We have personally met with every significant vapor recovery equipment manufacturer's management and technical teams. As an example, the vice-president of a very large vapor recovery equipment manufacturer was invited to and did participate three separate times in meetings in Sacramento in an attempt to help the company meet EVR certification requirements. Although we are reluctant to suggest specific design changes, we continuously work with manufacturers to keep them informed of flaws we detect in prototype or commercial products. If a failure occurs during the certification test, the manufacturer is required to identify the cause of the failure and present a modification to prevent a recurrence before further certification testing is conducted.*

Comment 92: Allow ISD certification to be non-system specific, requiring only compatibility testing to certify on like systems if possible. (i.e., assist systems and balance systems.)

Response: We agree in concept and issued an advisory to this affect in January 2002. Our intent is to modify the EVR regulations to incorporate this concept.

Comment 93: CIOMA notes that the requirement that EVR Phase II and ISD systems be tested together serves to ensure that the systems are compatible but also increases the potential for the systems to fail. The most likely result is fewer systems available.
In pursuit of more systems being available, we do not want to inadvertently encourage the Air Resources Board to lower their testing standards for new equipment. Gasoline station operators should be assured that the equipment they are forced to use will meet the required air quality standards and be robust enough to continue meeting those standards for the life of the equipment assuming it is properly installed and maintained.

Response: *We agree that certification tests of systems with ISD will be tougher to pass due to the continuous monitoring of ISD of system operation. We recognize that the benefit of ISD is the ability to reduce emissions related to equipment failure very quickly. Thus, we are proposing to allow some repair of equipment during the operational tests for systems seeking certification with ISD where the failure was detected by the ISD and where the system's approach to maintenance is fully or in part ISD-based.*

Comment 94: WSPA remains concerned that the EVR certification program is complex and overly restrictive. WSPA points out that only one Phase I system has been certified since the July 1, 2002 Phase I requirement came into effect for new installations. EVR Phase I is viewed as the most simple and straightforward requirement of the EVR program. WSPA is concerned about the success of the Phase II certification program, given that Phase II requirements are more complex than Phase I.

Response: *ARB does not advocate lowering the bar set by the EVR standards in order to allow rapid certification of multiple systems. It is expected that additional Phase I systems will be certified by 2003 to allow a choice for existing facilities which must upgrade to Phase I by April 2005. Even if only one EVR Phase II system is certified by April 2003, this system should not be penalized for their success in meeting all the certification requirements.*

Comment 95: WSPA recommends allowing Modules 4 & 5 and 2 & 3 be certified independently from each other. WSPA states that performance of the Phase II system is separate from the performance of the nozzle. The ability to certify nozzles separately would provide an incentive to certify a wider variety of nozzles. Also, a nozzle failure would not disqualify a Phase II certification test.

Response: *State law requires certification of complete systems (H&SC section 41954). Also, we disagree that the performance of the Phase II system is separate from the performance of the nozzle. Nozzles are identified in Table 16-1 of CP-201 as a "system-specific" component that requires full certification testing with each system. The full certification test for each nozzle has been the practice before the advent of EVR.*

Comment 96: WSPA requests an update on the policy to reduce the certification testing requirements for ISD systems.

Response: *A proposal to certify ISD systems by Phase II "system-type" will be included in the December 2002 EVR amendments.*

Comment 97: WSPA notes that Table 16-2 indicates that the non-system-specific components for Phase I equipment only require an engineering evaluation and operational testing. CARB staff policy has been to require non-system-specific components to undergo a full 180-day evaluation and full certification on a Phase I system prior to being approved for substitution on another Phase I system. WSPA believes this policy inhibits the certification of Phase I equipment.

Response: *There has been considerable confusion about the concept of system-specific and non-system-specific components of a system. Staff proposes to revise Section 16 of CP-201 to clarify how this applies to Phase I and Phase II systems. System-type specific "components," with regard to ISD and possibly processors, will also be addressed.*

Comment 98: WSPA requests specification of the requirements for demonstrating compatibility for Phase I and Phase II systems that were not initially certified together. WSPA believes that Phase II systems that meet the requirements of CP-201 do not affect the performance of the Phase I system. WSPA suggests that CARB conduct a study to determine the potential impact, if any, Phase I performance may have on existing Phase II systems. WSPA believes such a study will demonstrate that Phase I performance is unaffected by various Phase II systems and would be helpful in streamlining the certification process.

Response: *A study to determine that the performance of Phase I systems is not affected by Phase II systems is unnecessary. The burden of compatibility has been placed on the Phase II systems to be compatible with Phase I systems. Therefore, a Phase II system will not be certified if alteration in the compliant operation of the Phase I system is required to ensure that the Phase II system meets the requirements of certification. An example of this would be a Phase II system that causes the storage tank to operate at a positive pressure. This often results in the storage tank being vented when the Phase I vapor hose is connected to the storage tank before it is connected to the delivery tank. There*

is no regulation that prohibits this; in fact, many companies have procedures that require the delivery tank driver to connect the product hose to the storage tank before connecting it to the delivery tank, and the vapor hose is typically connected in the same order. The EVR pressure profile specification will greatly reduce the possibility that the storage tank is operating at a positive pressure when the delivery tanker arrives at the station. However, other conditions could similarly create excess emissions that would not occur if not caused by the Phase II system. This specification was make to ensure that Phase I systems that operate properly when there is no Phase II system do not operate less effectively as a result of a Phase II system.

Compatibility with one Phase I system will likely demonstrate compatibility with all certified Phase I systems unless a Phase I system is developed that operates significantly differently from all the Phase I systems currently certified or under test for EVR certification. A Phase II system that operates at positive pressure in excess of that specified by the pressure profile specification, or in a manner that could otherwise be incompatible with the normal operation of Phase I systems, will be considered if it can be demonstrated that it does not result in excess emissions from pressure-related fugitives or incompatibility with Phase I.

Sole source (CIOMA)

Comment 99: CIOMA is concerned that there will only be one option for Phase II equipment and ISD equipment. This may lead to higher costs and an inadequate supply of equipment for the independent gasoline station operators. While we understand that the ARB staff is no longer assuming that there will be 64 Phase II systems, with less than one year to go and no systems under test, we wonder if there will be even one available. But, an even worse scenario from our standpoint would be that there is only one available. ARB staff has said that they would continue with the current implementation schedule if one system is available. This would leave gasoline stations with one option for both Phase I and Phase II and ISD. For the smaller company, it may be difficult or impossible to get the equipment, or get the parts to repair and maintain the equipment in a timely fashion.

Response: *As stated above, even if only one EVR Phase II system is certified by April 2003, this system should not be penalized for their success in meeting all the certification requirements. Also note that existing facilities have a four-year period to upgrade to meet Module 2 requirements, which will allow time to certify multiple systems. We understand CIOMA's concerns regarding availability of certified equipment and note that section 19.1.2 of CP-201 provides some relief by allowing continued use of non-EVR replacement parts for existing facilities where EVR parts are not commercially available.*

Small Business (CIOMA)

Comment 100: CIOMA is concerned about the cost, availability, and effectiveness of EVR and ISD equipment when it is mandated for use by the Air Resources Board. The small businesses that comprise our membership tend to get cut off when there are shortages of supplies and tend to have to pay more for the smaller quantities that they purchase.

Response: *We recognize that small businesses have a disproportionate cost burden in achieving compliance with EVR. ARB staff has structured the cost-effectiveness analysis to provide information on costs by station size, as characterized by throughput. The analysis assumes list price costs, although it is expected that many facilities enjoy discount pricing. As demonstrated by the ISD exemption for facilities in the GDF1 category, EVR requirements will be modified if cost-effectiveness exceeds a reasonable level.*

EVR Applicability (Butte)

Comment 101: Butte County APCD assumes the six modules of EVR are intended for retail stations only and that EVR will not be required for non-retail GDFs. Please clarify this in the final report.

Response: *EVR regulations pertain to certification of vapor recovery systems allowed to be sold, installed and operated in California. District rules specify which facilities are required to install vapor recovery systems. Thus, vapor recovery systems may be required for all stations, or only retail stations, or some other classification, depending on the district rule. If the vapor recovery is required only because of the state ATCM for benzene, then it applies only to retail stations as defined in the ATCM.*

Test Procedures (Gilbarco, OPW)

Comment 102: Gilbarco notes that Equation 12-7 for efficiency determination will lead to erroneous readings for ORVR vehicle fuelings. Gilbarco suggests the mass emission factor be used instead.

Response: *We will modify section 4.1 of CP-201 to remove the calculation of efficiency for ORVR fuelings.*

Comment 103: OPW recommended that fuelings be conducted using a test can to take the variable of the vehicle out of the equation. OPW data show that fill pipe geometry and position does affect the angle that the nozzle can sit in the automobile. OPW also notes that all drops are not equal volume and suggest that total volume rather than number of drops be considered. OPW suggested several modifications to improve consistency and clarify the test procedure.

Response: *We have incorporated many of the modifications suggested by OPW in a revised TP-201.2D.*

Definitions (Gilbarco)

Comment 104: Gilbarco notes that the current definition of Phase II in D-200 refers only to control of vapors during vehicle fueling. The EVR Phase II systems must also control vapor emissions during times where no vehicles are being fueled. A suggested definition is "Phase II; The control of all vapor from a gasoline dispensing facility that are not controlled by a Phase I system during a Phase I delivery."

Response: *The definition of Phase II is proposed to be revised to "the control of vapors during the transfer of gasoline from the gasoline dispensing facility to the vehicle and storage of gasoline at the gasoline dispensing facility".*

In-use Vapor Recovery Systems (CAPCOA, Glenn)

CAPCOA requested action on improvement of existing equipment, new compliance test methods and vapor recovery training. Glenn recommended following the example of the State Water Resources Control Board to require state licensing for contractors installing EVR equipment. Although these topics are outside the scope of the technical review, responses are provided below:

Comment 105: Verify reported poor performance of balance nozzles with external check valves. Find a short-term solution for what appears to be a major deficiency in balance systems.

Response: *The April 1, 2003 EVR Phase II requirements effective date will result in the de-certification of such nozzles. Districts are currently able to take more immediate action based on their own rules and section 41954(g)(2) of the California Health and Safety Code.*

Comment 106: Develop a compliance test for PV valves in the field (without removal). Develop a statewide compliance method to test hanging hardware after drive-offs.

Response: *We agree such tests would be useful and should be developed and are willing to work with CAPCOA. However, we are looking for CAPCOA to take the lead in the initial development of such enforcement field test methods.*

Comment 107: Statewide CARB training is needed at all levels of the vapor recovery industry. Such training is now only practical at the largest air districts. The following is recommended:

- ✓ Provide a state-recommended inspection and maintenance training program for all GDF operators. Provide training for this regularly, as is now done with reading visible emissions.

- ✓ Provide required training for persons doing performance testing at stations using CARB procedures. Mandate this training as a prerequisite to testing. This does not have to go as far as certifying testers, but it should require testers to successfully complete training.

- ✓ Require EVR component manufacturers to provide or arrange for training for repairers and installers of VR systems. Mandate that only those who have successfully completed training that is applicable to the components they wish to install or repair systems. Certification need not be done by CARB; CARB could simply monitor manufacturers to ensure they are providing adequate training. In the best case, CARB would maintain an on-line database on vendor certifications (i.e., who on which system is certified).

Response: *We agree that a broad vapor recovery training program should be developed and we are willing to work with CAPCOA to that end. Note also that providing training is currently imposed on equipment manufacturers both in the EVR regulations and in EVR Executive Orders. Since training is provided by manufacturers we believe the district could require as a permit condition all installers and maintenance personnel take the training offered. The installers or maintenance personnel would be subject to enforcement action if the equipment is not installed correctly or maintained properly. We would welcome CAPCOA's input in making existing requirements more robust. We generally agree with the CAPCOA recommendations.*

Twenty-two comment letters/faxes/e-mails were received from November 2001 through February 28, 2002. These comments and CARB staff's responses are grouped as follows:

1. EVR Schedule (ARID, CIOMA, Nella Oil, WSPA)

ARID Technologies comments that the new EVR requirements are quite fluid and dynamic. The practical interpretation of these evolving rules presents challenges for those who are not regulatory experts but who wish to comply and meet all of the requirements. ARID is very concerned that the present certification protocol has significantly delayed the air quality benefits available to the public.

Response: *Staff agrees that the emission reductions associated with EVR should be implemented as quickly as practicable. However, the technology-forcing aspect of some of the EVR standards made it necessary to allow time to develop a new generation of vapor recovery equipment. The EVR certification protocol provides safeguards to ensure systems seeking certification are tested on sites representative of existing facilities.*

CIOMA believes that ARB staff has been baselessly optimistic about the technical progress and overall feasibility of EVR. Phase II EVR and ISD are scheduled to be implemented in April of 2003. A finding of 'Technologically Feasible' assumes that systems will magically appear, be tested, adjusted, retested, pass a six-month certification test, and go into production in time to adequately supply demand, all within a span of 14 months. Despite their failure to do so within the last two years and two months. We are now at the two-year review point for this technology-forcing program, and we have virtually nothing concrete to evaluate.

CIOMA notes that at the Technology Review Workshop on February 5, ARB staff mentioned their 'conservative assumption' that 94 certifications would be forthcoming- 14 in Phase I, 64 Phase II, 16 ISD. At the outset of the EVR program in 2000, ARB staff was confident that several Phase I systems would be certified within Phase I's deadlines. That confidence was misplaced. At the present time, seven months beyond the implementation date of Phase I EVR, there is one system certified and one other struggling repeatedly to pass certification. And Phase I EVR was considered the most readily achievable segment of this ambitious program.

Nella Oil believes it is unlikely that a Phase II system with ISD can be certified by April 2003. SaberVac suggests that the EVR timeline be modified to allow more technology development time.

WSPA has several concerns regarding the April 2003 implementation timing for Modules 2 and 6, Phase II and ISD, respectively. First, noting that April 2003 is only roughly one year away, WSPA is concerned that there does not appear to be much visible activity on the part of equipment manufacturers. For example, only one potential ISD system supplier participated in the pilot program which is currently underway, and, WSPA is not aware of any manufacturer that is actively

planning on submitting a Phase II vapor recovery system for EVR certification testing. WSPA believes that it is less than optimum to have only one EVR-certified Phase I system; WSPA is concerned that the same situation could happen with Phase II systems and ISD systems. Second, EVR-certification testing for Phase II systems will have to be conducted using an EVR-certified Phase I system. WSPA feels that the timing for the potential approval of any Phase I system will be critical to the successful implementation of Module 2 requirements. WSPA believes that a similar concern applies to the issue of matching nozzles with Phase II systems as the Phase II systems undergo EVR-certification testing. Third, WSPA is concerned that the need to conduct simultaneous EVR certification testing, on both a Phase II system and an ISD system, will unnecessarily encumber the testing process and will reduce the likelihood that both systems will pass. Therefore, WSPA suggests that consideration be given to postponing the implementation dates for Modules 2 and 6, or, in the alternative, assigning separate implementation dates for these two modules.

Response: *Our communications with vapor recovery equipment manufacturers indicate that one or more EVR Phase II systems could be certified by April 2003. If there are no Phase II systems on test by summer of 2002, we will consider modification of the schedule at the September 2002 board meeting.*

2. Feasibility Assessment (Chevron, CIOMA)

Chevron suggests that a "yes" for technological feasibility should include being able to function for 180 days "hands-off". His example: liquid removal devices can work at 5 ml/gal, but can they meet EVR specs for 6 months? What is our basis for saying so?

Response: *We agree that the EVR standards would constitute a higher bar, unfortunately, we do not have the data to confirm the 180-day performance at this time. However, we would argue that once a standard has been demonstrated for a shorter period than 6 months, that extending the durability of the system is assumed to be feasible. Also, CP-201 does not require "hands-off" performance. Reasonable maintenance is allowed and must be specified in the system maintenance manual.*

CIOMA states that the demonstration of proof as delineated on ARB's Criteria for Technological Feasibility (slide 7 from Feb. 5 presentation) is disturbingly vague.

Feasible?	Demonstration
Yes.	Certified system OR ARB or Manufacturer data shows meets standard
Likely	*Information suggests* standard can be met
Maybe	Development underway to meet standard
Not yet	Data indicates can't meet standard now

'Manufacturer data shows meets standard' sounds reasonable if it were not for the costly lessons learned from vapor recovery. What seemed to work fine for the manufacturer seldom if ever did so at certification or in common use. And with that hard experience in the same field of technology in mind, the demonstrations for "Likely" through "Not Yet" are mere variations on a theme of wishful thinking. The only concrete demonstration is a certified system, and there is only ONE of those in Phase I, and NONE in Phase II.

Feasibility is defined as "1.able to be accomplished: possible 2. appropriate, suitable". There is no evidence that currently supports the conclusion that EVR Phase II is able to be accomplished, and it is neither appropriate nor suitable to go back down the vapor recovery road of 'making do' with costly substandard interim equipment in hopes that better things will eventually come along. The whole point of EVR was to insure that industry would at last be able to buy durable equipment that actually operated at a stringent certified standard. ARB has, at present, nothing but degrees of hopefulness on which to base a conclusion that EVR Phase II is technologically feasible. The absence of substantive evidence upon which to base a technological assessment of feasibility, and the terrible impact that such an unsubstantiated favorable assessment is likely to have on California's small business fuel retailers demands that EVR and ISD be postponed until there is a probability rather than a fond hope that those 94 systems are deliverable, cost effective and certifiable.

Response: *Staff disagrees that a system must be certified to meet an EVR standard before making an assessment of technological feasibility. However, of the 37 EVR standards in this review, 13 or 35% are already demonstrated by currently certified systems. Another 13 or 35% are demonstrated by ARB in-house testing. Thus, 26 or 70% of the EVR standards are deemed technologically feasible based on ARB test data. 9 or 25% of the standards are assessed as "yes" or "likely" based on manufacturer information that is not yet supported by test data. Two or 5% of the standards have not yet been demonstrated.*

3. In-Station Diagnostics (API, ARID, Butte Co., ClOMA, Glenn Co., Healy, Mendocino, Fritz, Nella Oil, SaberVac, WSPA)

API comments that based on presentations and comments at the February 5th Tech Review Workshop, it appears there is still significant work needed to bring practical and cost-effective ISD systems into service. According to Slide 49 of the February 5th presentation, ISD adds some $7,000 to the cost of an EVR system at a 75,000 gallon/month station and approximately $13,000 to a 300,000 gallon/month location. ISD represents about 30% of the cost of an EVR installation. This is a significant outlay for a system that only monitors vapor control performance, but does not control emissions.

Response: *The costs for ISD cited in the workshop presentation as taken from the EVR staff report have been demonstrated to be cost-effective. Staff concedes that ISD does not directly control emissions; however, ISD does result in emission reductions by alerting the station operator to take corrective action upon identification of vapor recovery equipment failures.*

API states that new EVR equipment should prove to be more effective given the implementation of the 180-day durability test, the new certification and field-testing procedures, and improved equipment quality control. In addition, the operating and maintenance requirements that will be specified in Executive Orders will assure that systems are operating optimally without ISD. Considering that EVR system performance should be equal or very close to the level observed during certification, the need for an expensive ISD system is difficult to justify.

Response: *Staff agrees new EVR equipment should be more durable and effective than previously certified systems. However, optimum performance of vapor recovery systems also relies heavily on proper installation, regular maintenance of equipment, and equipment replacement after completion of useful life. Significant emissions occur as vapor recovery system failures now cannot always be detected by visual inspection, and manual field testing is infrequent. ISD will provide continuous monitoring to ensure proper system operation at all times.*

API strongly urges ARB to compare the costs/benefits of a system that detects failures solely by monitoring UST pressure with the costs/benefits of the complex system specified in the EVR regulation. Such a comparison may show that most of the benefits attributed to ISD can be achieved at a fraction of the cost. Not only would this improve the cost-effectiveness of the system, but it would simplify the system and thereby improve the probability of multiple manufacturers successfully certifying ISD systems.

Response: *Staff has included this comparison as part of the technology review.*

ARID Technologies supports Staff's willingness to consider ISD alternatives in addition to the single approach proposed by one market leading supplier. We believe that we can provide the required functionality at a fraction of the cost stated by the supplier during the Workshop.

Response: *ISD alternatives must meet all of the requirements listed in the CP-201 ISD appendix. Equivalent strategies are allowed per section 1.6.*

CIOMA states that the failure to address the possible adoption of ISD into current vapor recovery systems, despite the fact that that is where they have been developed and pilot tested, is troubling. And if it is ARB's intent to use ISD on

existing systems until EVR is available, the repeated expense to small business is both potentially economically lethal and once again, staggeringly unjust.

Response: *The intent is that ISD will be part of an EVR-certified Phase II system. ISD will not be required for existing installations until the deadline for upgrading the Phase II system to meet EVR requirements.*

CIOMA also sees a potentially serious problem in market competition stemming from Veeder-Root's acquisition of Marconi/Gilbarco, one of the largest system manufacturers in the industry. What about system compatibility? How motivated will they be to insure compatibility with competing systems at comparable cost? And how many other dispensing system manufacturers will want to give their source coding information to their competitor, as must be done to integrate the Veeder-Root ISD with a dispensing system? While these are not strictly speaking technical flaws in the ISD, they certainly affect its use and applicability.

Response: *The EVR certification process addresses compatibility issues between ISD and Phase II equipment upfront. The ISD and Phase II manufacturers will need to work together in order to achieve CARB certification.*

Butte County AQMD states that the current trigger level of 160,000 gallons/year for ISD may serve the heavily congested areas of the state, but is an unwarranted financial burden to retail gasoline stations in Butte County. Butte Co. requests the trigger level for ISD be raised to 1,000,000 gallons/year. Butte Co. suggests a close examination of the implementation schedule for ISD and consideration of a pilot program for the first 2 or 3 years to determine if the installation and maintenance costs of ISD are realized. Butte Co. believes that the ISD final costs will far outweigh the insignificant emission reductions ISD will bring.

The Glenn County APCD believes that the ISD exemption level should be increased to include those GDFs in Level 3 (75,000 gpm). GCAPCD believes that the cost-effectiveness numbers are too high for requiring a system that does not actually control or eliminate emissions. For those GDFs in Levels 1, 2, or 3 an enhanced maintenance and monitoring program should be required in lieu of requiring ISD. The level and frequency of maintenance and monitoring for level 1, 2, or 3 GDFs could be worked out between CARB and CAPCOA committees.

Response: *Staff will consider modifications to the ISD exemption levels after adjusting the ISD costs based on more recent information and recalculating the cost-effectiveness of ISD. However, the continuous monitoring and shut-down consequences provided by ISD provide advantages over an enhanced maintenance and monitoring program.*

Healy believes it is not necessary to monitor gasoline flow rates to make ISD a reality. If a company such as Healy Systems can monitor vapor flow rates, it is

unnecessary to monitor the liquid side of the equation. By use of the Healy 800 ORVR Nozzle and Healy electronic ISD Vapor Indicator, we can measure and record:

- A blocked vapor hose (no vapor flow)
- An ORVR fueling (partial vapor flow)
- A pre-1998 vehicle (full vapor flow)

This straightforward flow device sends a signal to the appropriate generic monitor, which would have a Healy-designed software interpret the signals generated by the flow device. Would CARB accept this device as an innovative system?

Response: *Staff will consider all approaches to fulfill ISD requirements. The CP-201 ISD Appendix specifies what parameters to measure, but not how to measure those parameters. ISD alternatives must meet all of the requirements listed in the CP-201 ISD appendix; however, equivalent strategies are allowed per section 1.6.*

Mendocino County AQMD requests that districts in ozone attainment, or that can demonstrate an overwhelming biogenic VOC inventory, be exempted from requiring ISD. Barring that, Mendocino requests that the statewide trigger be raised to 900,000 gallons throughput per year. Finally, barring that, Mendocino requests that districts in ozone attainment, or that can demonstrate an overwhelming biogenic VOC inventory, be allowed to set the exemption level at 900,000 gallons per year. In these cases, the EVR costs incurred by the community have absolutely zero air quality benefits. Furthermore, it will be a serious attack on the viability of those few rural stations that managed to survive the UST requirements. Government loses its credibility when it imposes restrictions and costs on its citizens that demonstrably do not have benefit to the community.

Response: *Benzene emissions from improperly functioning vapor recovery systems can harm the health of the local population. In addition, hydrocarbon emissions can potentially travel to neighboring districts that are currently in or near non-attainment status.*

Fritz Curtius reports that one small European country has recently decided to control vapor recovery systems with a portable ISD system.

Response: *An ISD system that measures the hermeticity (leak tightness) of vapor recovery systems has been developed and is currently in limited use in Europe.*

Nella Oil concerns include the fear that the Veeder-Root system is expensive, problematic and can't recognize ORVR vehicles. Nella believes that there is no

full ISD system at any of the pilot program test sites. The pilot program consists of only one vendor (Veeder-Root) that is being developed for only one brands of dispenser and will be an add-on to Veeder-Root UST monitors. Nella fears a Veeder-Root monopoly that will lead to high costs and limited availability. Nella thinks EVR Phase II systems will be much improved so don't need ISD now, can develop in future.

Response: *ISD systems must be cost-effective. In addition, ISD systems must have the reliability and durability to pass the 180-day (minimum) EVR certification test. ISD developers must determine how to identify or account for ORVR vehicles. The ISD systems currently installed at the ISD Pilot Program test sites have demonstrated the capability to measure both vapor collection and vapor containment for both balance and vacuum-assist vapor recovery systems; have demonstrated the capability to record and store ISD data and reports; and have demonstrated the capability to detect vapor recovery system failures.*

Staff agrees new EVR equipment should be more durable and effective than previously certified systems. However, optimum performance of vapor recovery systems also relies heavily on proper installation, regular maintenance of equipment, and equipment replacement after completion of useful life. During the ISD Pilot Program, the pilot ISD systems have identified and quantified the emissions from various vapor recovery system failures on a near real-time basis.

Staff expects multiple ISD solutions by many ISD developers will be certified.

SaberVac suggests that times of deliveries and non-operational hours of the station be excluded from ISD monitoring and reporting requirements. CARB should be open to partial solutions of ISD that meet the spirit and goals of EVR. CARB should set operational/functional ISD requirements, not technology requirements that stifle creativity. Once an ISD system is approved, then use on another system should not have to undergo a complete new test. ISD should be a tool for the marketer, not a "policing mechanism".

Response: *ISD systems must be continuously operational 24 hours a day. Emissions from improper Phase I deliveries and other causes can occur 24 hours a day. The CP-201 ISD Appendix describes what parameters to measure (vapor collection and vapor containment), but not how to measure those parameters. Staff believes this approach encourages and enhances creativity. CARB is willing, and has encouraged, ISD developers to present full or partial ISD solutions for evaluation. However, ISD alternatives must still meet all of the requirements listed in the CP-201 ISD appendix. Staff has developed a "system-type" certification strategy for ISD systems that is expected to allow an ISD system, once certified, to be certified on other Phase II systems with reduced testing. ISD is expected to be a diagnostic tool for marketers and maintenance staff to maintain vapor recovery systems at higher in-use vapor recovery efficiencies; the pilot ISD systems have already demonstrated their effectiveness*

to assist maintenance staff expeditiously identify and repair defective vapor recovery system components.

WSPA provided several comments on the ISD pilot program protocol. Their main points were that ARB consider ISD that meets a subset of total ISD goals, distinguish between need to determine ISD features and ISD performance (testing), improvements to challenge-mode testing, evaluation of unattended operation and a review of ISD cost-effectiveness.

Response: *ISD systems must meet all of the requirements listed in the CP-201 ISD appendix. During the ISD Pilot Program, the ISD systems were tested using challenge mode techniques; during certification, ISD systems will be tested using challenge mode techniques. Although ISD cost-effectiveness was initially based solely on vacuum-assist vapor recovery system emissions expected to be prevented by ISD systems, data from the ISD Pilot Program have identified potential balance vapor recovery system emission reductions that could be prevented by ISD systems that equal or exceed vacuum-assist vapor recovery system emission reductions.*

Module 6 of the EVR Program, the requirements for In-Station Diagnostic (ISD) systems, continues to be one of WSPA's most significant concerns. WSPA's concerns are based on, what in their view, is a very questionable, overly-optimistic emissions benefit coupled with an understated estimate of the true installed cost for ISD systems (these issues are discussed in greater detail in the section on cost analysis). WSPA expects that, upon further analyses of both costs and benefits by the ARB staff, it will be concluded that the target slate of performance goals for ISD systems (as stated in the ISD Appendix of CP-201) cannot be met in a cost-effective manner. Therefore, WSPA strongly encourages ARB to explore alternatives such as those as mentioned at the workshop (i.e., manual monitoring, partial ISD with supplements, etc.). We believe that alternate approaches to fulfilling the concept of In-Station Diagnostics could prove attractive to all stakeholders, including the ARB.

WSPA strongly urges ARB to evaluate actual potential emissions benefits and obtain actual pricing information for various alternative ISD solutions, and then to compare the costs and benefits of these various systems. For example, we are aware of an ISD system that detects failures solely by monitoring tank ullage pressure – that system is the Blackmer EnviroSentry™ Electronic Vapor Recovery Monitoring System. (It is important to note that the mention herein of this proprietary product is solely for the purpose of providing an example of an existing, commercially-available monitoring system. It is neither intended to endorse the product, nor, to be negative toward it in any way.)

WSPA believes that comparisons of costs, benefits, and cost-effectiveness values, for systems which potentially meet the specifications in the ISD Appendix of CP-201, with those of alternative systems, may show that most of the benefit

attributable to ISD can be achieved relatively economically with alternative systems. Thus, in addition to improving the cost-effectiveness of ISD systems, the ARB would improve the probability of multiple manufacturers being able to certify systems.

Response: *ISD systems must be cost-effective, and must meet all of the requirements listed in the CP-201 ISD appendix. Equivalent strategies are allowed per section 1.6. Data from the ISD Pilot Program indicated that the actual emission reductions identified by and prevented by ISD systems may exceed twice the estimate used in the original cost-effectiveness calculations. Alternative ISD solutions are encouraged and allowed, and staff expects multiple ISD solutions from multiple ISD developers to be certified. Staff have evaluated the performance and capability of the Blackmer EnviroSentry electronic monitoring system, and will evaluate additional ISD systems as they are presented to CARB for review.*

4. UST Pressure Standard (ARID, CIOMA, Marconi, SaberVac, Chevron, WSPA)

ARID Technologies suggests that the calculation methodology for average tank pressure has been modified from typical arithmetic average calculation methods. The decision to characterize times at negative pressures as “zero” pressure results in calculated average storage tank pressure values greater than those obtained with traditional math. Perhaps the threshold pressure of + 0.25 inches water should be appropriately adjusted to take into account the new averaging technique.

Response: *The calculation method for determining compliance with UST pressure drop limits has not been changed, but merely clarified in the amendment to CP-201 presented to the Board in October 2001. The UST pressure limits will not be adjusted.*

CIOMA comment on UST Pressure Criteria (slide 21) Daily average $\leq$ +0.25 in water, Daily high $\leq$ +1.5 in water- Feasibility adjudged “Yes”, despite the text of slide itself.

> Comment: ‘Vacuum system cannot meet w/o processor (non-operational hours, winter fuel).
>
> Response: Will collect additional data at stations with overnight closure and winter fuel.’

Staff has agreed that they don’t have the answer to that objection, but that they will look into it. That should not generate a yes; rather by your own criteria, a maybe or a likely. And the further issues raised in verbal comments, that low throughput stations may well not be able to pass this requirement, that

uncontrolled emissions differ substantially summer to winter, and that turbine systems can generate false positives, underline the expanse of uncertainty here.

Response: *The UST pressure criteria can be met by Phase II systems with processors that maintain continuous negative pressure. Thus, the technical feasibility is "yes". When EVR was adopted, staff believed that other Phase II systems could also meet these pressure drop limits without a processor. Data submitted by vapor recovery equipment manufacturers show that service stations which shut-down overnight while dispensing winter fuel show increases in vapor growth which preclude meeting the UST pressure limits (see next comment).*

Marconi does not believe a vacuum assist system can meet the UST standard (daily ave 0.25 in, daily high 1.5 in) without a processor. Data shows that the standard can be met while service station is operational, but cannot control UST pressure during closed or non-operational hours, especially for winter fuels. Marconi requests exemptions to the UST pressure standards to account for non-operational hours, winter fuel and ORVR vehicle penetration.

Response: *UST pressures that exceed the EVR limits lead to unacceptable fugitive emissions. These cannot be ignored by exempting non-operating hours, winter fuel dispensing or ORVR vehicle penetration.*

WSPA recommends that, in view of the proposal to disallow the use of negative pressures in the calculation of average pressure, staff review the 0.25-inch WC UST ullage pressure limit for appropriateness. We are seeking assurances that a well-maintained facility will be able to comply with the pressure limit after taking into consideration such factors as product deliveries, ambient temperature, product RVP, hours of operation, etc.

Response: *As discussed above, the calculation procedure for UST pressures is not proposed to be changed. The UST pressure limits ensure that fugitive emissions do not compromise the total Phase II emission factor of 0.38 lbs/1000 gallons dispensed.*

5. Max A/L of 1.0 for assist w/o processor (Marconi)

Marconi does not think their system can meet this requirement 100% of the time due to pressure drop differences in assist system hanging hardware. Marconi suggests an A/L requirement of 1.0 + 0.10 or develops an assist system pressured drop budget similar to that for EVR balance systems.

Response: *We agree. An assist system pressure budget will be proposed in the next EVR amendments. In the meantime, Marconi may submit pressure drop allowances for each component in their EVR system application.*

6. Phase II Emission Factor and Pressure-related fugitives (ARID, Marconi, Husky)

ARID Technologies requests a sample calculation for the fugitive emission factor according to the new EVR requirements.

Response: *An example calculation is included in TP-201.2F, Pressure-Related Fugitive Emissions. However, the example calculation in TP-201.2F, as adopted February 1, 2001, is missing Equation 9.3 that provides the calculation of the mass emission factor. This equation will be added back in during the next EVR amendments. The missing text is as follows:*

$$E_{prf} = \left[\frac{(0.152 lb/hr)(24 hr)(1{,}000)}{8{,}500 gal} \right] = 0.429 lb/1{,}000 gal$$

Marconi is concerned that changes to the Phase II emission standard may affect their ability to certify, however, it is difficult to tell until an EVR certification test is conducted. Marconi may request a modification of this standard after further testing.

Response*: Assist systems with processors that maintain continuous negative pressure can meet this standard.*

7. Dispenser standards (SaberVac, Marconi)

SaberVac would like a dispenser to be considered non-system specific. If a system with certain vapor piping does not electrically interface with the dispenser, it should be able to be approved with other dispensers that meet the same piping criteria.

Response: *Dispenser vapor piping (balance) is already listed as a non-system specific component in Table 16-2 of CP-201. Staff will propose to remove the "balance" specificity for the next EVR amendments.*

Marconi would like an exemption for some older balance dispensers that may not meet the dispenser pressure drop requirements.

Response: *Balance dispensers must be upgraded by April 2007 to meet pressure drop requirements. No exemption to this requirement is expected.*

8. Max A/L of 1.3 for system w/ processor (OPW, Hirt)

OPW's Hasstech system currently operates with an allowable A/L range of 1.4 to 2.4, with a nominal A/L of 1.7. Modifying the system to meet a maximum A/L of 1.3 would not achieve adequate recovery of vapors or hose liquid removal unless expensive variable vapor valves are developed. OPW chooses to discontinue

sales of the Hasstech system after March 31, 2003 in CA, but will continue to offer it in other states.

The Hirt VCS 400-7 system requires a minimum A/L of 1.35 when dispensing at 8-10 gpm. The system design raises the A/L for lower dispensing rates. Hirt does not understand a need for the requirement of 1.3 as their system suffers from none of the reasons given in the staff report that led to this limit. Hirt believes that the high A/L was needed to overcome the vacuum from the "sleeve test".

Response: *Staff understands that the design of currently certified processor systems will need to change to meet EVR requirements. No change to the standard is expected.*

9. Processor standards (CIOMA, VST, ARID, OPW, Hirt)

CIOMA points out that ARB's presentation included a feasibility upgrade from Maybe to Yes on the Maximum Hydrocarbon Rate to Processor (slide 23). The rationale given was: "Existing certified vapor processors cannot meet. Proposed membrane processors can meet." On what objective criteria was this conclusion reached? What testing led to this assumption? If ARB was given manufacturer data demonstrating this, what was it? Is it universally applicable to appropriate existing systems? If, after careful testing, it is found that membrane processors can achieve the standard, that is the point at which feasibility should be evaluated as a "yes".

Response: *The upgrade in feasibility from "maybe" to "yes" is based on data from a membrane manufacturer (see below).*

Ted Tiberi indicates the ARID system has demonstrated it can meet the 5.7 lbs/1000 gal feedrate to the system, but the demonstration did not include ORVR fuelings while operating in a "slight positive" pressure mode. Operating in negative pressure modes could generate feed rates exceeding the 5.7 lbs/1000 gal threshold.

OPW states that the Hasstech processor cannot meet the 5.7 lbs/1000 gal processor feed rate and the certified efficiency rate simultaneously, and OPW questions the value of this feedrate limit.

VST states that their membrane processor can meet the 5.7 lbs/1000 gal processor feed rate limit using the net flow concept. In their design, the net flow to and through the processor is less than 0.10 lb/1000 gal. In extreme failure mode, such as breach of membrane, the net HC rate is less than 2 lbs/1000 gal.

Response*: Change feasibility status of processor feed rate limit from "maybe" to "yes".*

VST suggests that the intent of the standard could be better achieved by rephrasing the standard to address the maximum rate of HC emissions in the event of processor failure. This would address scenarios where the processor meets the feedrate limit under normal conditions, but exceed this emission rate immensely under a failure mode. The change suggested is the maximum HC rate **FROM** a processor shall not exceed 5.7 lbs/1000 gal. VST states it may be desirable to specify a time period with this standard (X hours or days). Another approach would be to set a maximum HC rate from an EVR system, which would cover failure mode emissions for all types of technologies, not just the processor.

Response: *We agree. This change will be proposed as part of the next EVR regulation amendments.*

Hirt understands the reason for the limit is to minimize vapor emissions in the event of a processor failure. A processor must be a fairly large capacity to handle bootless nozzles. A limit on feedrate would stifle development and severely limit the design choices available.

Response: *The limit on feedrate is proposed to be changed to a maximum hydrocarbon emission rate from a processor during failure mode (see comment above).*

OPW cannot find testing labs which can meet the challenge of evaluating the HAPs limits. OPW notes that San Diego APCD suggests 1,3-butadiene is created during the refining process and is neither created or destroyed by the processor.

Response: *Staff will provide a listing of laboratories that can conduct the HAPs analysis. 1,3-butadiene may be present in some winter fuels. In these cases, the 1,3-butadiene may be measured before and after the processor to assess the contribution of the processor to the HAPs emissions.*

10. ORVR (ARID, CIOMA, Fritz, Nella Oil)

ARID points out that high penetrations of ORVR vehicles, such as at rental car stations, can overwhelm processors with lean vapors.

Response: *CP-201 requires vapor recovery system to operate within emission limits for ORVR penetrations up to 80% for certification. Staff will consider an increase to 90% ORVR penetration.*

CIOMA questions EVR's emissions benefits as outlined by staff. In slide 13, 2020 Calculation, the premises and conclusion are oddly slanted.

> 'Assume uncontrolled Phase II emissions of 230 tons /day statewide. Those emissions when mitigated by ORVR only (207 ORVR) (0.050) = 10 tons /day; = 23 uncontrolled + 33 tons day
> Emissions with ORVR and Phase II (230) (0.05) = 12 tons day total culminating in a 22 tons per day benefit!'

On what basis should we assume uncontrolled Phase II emissions statewide? Phase II emissions are currently controlled by existing vapor recovery equipment. There is no reason to assume that this equipment will be summarily removed. Surely a more valid assessment of EVR's benefit would be to compare known VR +ORVR as shown with EVR + ORVR projections, and the difference between those two is the EVR benefit. It would assuredly not be 22 tons per day. And the recalculation of that factor would significantly impact the cost effectiveness analysis.

Response: *The calculation in Slide 13 is intended to address the comment in Slide 10 that "there is no return on investment for EVR systems, as ORVR vehicles will replace Phase II". Our point is that Phase II will still be necessary in year 2020, even if the ORVR vehicle fleet penetration is 90%.* ***If*** *Phase II systems were removed in 2020, there would be 22 tons/day of excess emissions. The removal of Phase II systems is not being considered in EVR.*

Fritz Curtius from Europe comments that ORVR cars produce very high emissions at gas stations, because clean air is transported into the UST. The emission is 10 times the running emission of low emission vehicles. The compatibility of ORVR is not real. Mr. Curtius suggests that air return lines be equipped with saturation-humidifiers to reduce emissions during ORVR fuelings.

Response: *ARB field studies have shown that fueling ORVR vehicles with some Phase II systems can lead to air ingestion and subsequent vapor growth, which cause excess emissions. EVR requires Phase II systems to be ORVR-compatible, but leaves the mechanism for achieving compatibility to the vapor recovery system manufacturer.*

Nella Oil is concerned that there is no return on investment for EVR systems, as ORVR vehicles will eventually negate the need for Phase II vapor recovery.

Response*: Phase II will likely be required for many more years in California. Calculations show that if Phase II was removed in 2020 with a projected ORVR penetration of 90%, this would result in excess emissions of about 22 tons/day.*

11. Nozzle standards (ARID, Healy, Husky)

ARID Technologies requests that processor certifications be allowed with existing nozzles employed by presently installed Stage II vapor recovery systems. If the extremely stringent nozzle standards/specifications survive the

technical/feasibility review, allow engineering analysis or field testing at future date to retrofit appropriate new nozzles (Stringent nozzle standards include <1 drop per refueling, <1 ml/nozzle/test and <0.24 lb/1,000 gallons spillage).

Response: *CARB certifies processors as part of a Phase II systems, not as a separate component. Phase II systems must meet all the EVR standards in effect at the time of certification. The nozzle standards mentioned do not take effect until April 2004, so there is nothing to prevent a Phase II system to certify to all EVR standards except the nozzle standards. The Phase II system would need to undergo recertification with a nozzle that meets the EVR 2004 standards to be sold after April 2004.*

Healy believes that assist nozzles are being "held to a higher standard" than are balance-type nozzles. The only way an assist nozzle "spits" is if it is used in a non-standard fueling practice, whereas a balance nozzle will also spit when the boot is manually pulled back and the lever is lifted (i.e. Motorcycle or utility can). Why, then, is balance not subjected to the same non-standard fueling practice tests, as are assist systems?

Response: *Staff disagrees that balance and assist nozzles are being held to different spitting standards. Both nozzles will be evaluated for spitting using TP-201.2E, Gasoline Liquid Retention in Nozzles and Hoses. Section 6.4 of TP-201.2E describes the nozzle spitting test, which is independent of a fueling event. The tester removes the nozzle from the dispenser and points the nozzle down in a container. With the dispenser in the "off" position, the nozzle trigger is pulled and held until there is no gasoline flow for 10 seconds. This release of gasoline is recorded as "nozzle spitting".*

Husky says vehicles must meet the CA standard for vehicle fill necks in order to work properly.

Response*: Section 4.7.1 of CP-201 states that "each vapor recovery nozzle shall be capable of refueling any vehicle that complies with the fillpipe specifications and can be fueled by a conventional nozzle".*

Testing already indicates that the 100-ml liquid retention standard can be met, however, the test procedure is dependent on the vehicle and customer behavior (topping off).

Response*: Yes, we agree that the 100-ml liquid retention standard is technologically feasible.*

Husky is working to assess the feasibility of the "dripless" nozzle standard. Husky will supply CARB with the test results for lab tests with their nozzles using mineral sprits at a temperature and flow rate. Husky does not have results for gasoline because we do not know its RVP or its chemical make up. We do know

from our testing that temperature and such things as MTBE or ethanol content have an effect on the way that the fuel adheres to the nozzle spout. Flow rate has an effect because the higher the flow the more fuel that exits the spout when the nozzle shuts off because of its velocity. The 1-drop per fueling is not achievable. The cohesion, adhesion and viscosity of gasoline blends vary with temperature, etc. This causes some fuels to wet the surface and slowly drip off and some to leave the spout almost dry.

***Response**: We will consider modification of the 1-drop standard if necessary.*

The nozzle spitting standard of "less than 1 ml/nozzle/test" is already met by balance nozzles and can be added to assist nozzles.

***Response**: Update feasibility status from "maybe" to "likely".*

Husky makes the following comment regarding the 100-ml liquid retention standard. The test procedure (TP-201.2E) does not separate liquid retention caused by the nozzle from liquid retention in the nozzle from a splash back caused by the vehicle or the person doing the fueling. The 350 ml per 1000 gal testing that was done by CARB is proof that most of the liquid does not come from nozzle defects but from vehicle defects. Husky has supplied three suggested vapor recovery nozzle performance tests that eliminate the variability of the vehicle fueling interface.

***Response:** We appreciate the suggested nozzle performance tests and will evaluate these tests for possible incorporation in the EVR program. However, we cannot assess real-world nozzle emissions without evaluation of vehicle fuelings as done by our adopted test procedures. We disagree that the CARB testing proves that the liquid retained is due to vehicle defects.*

12. Balance system component pressure drops (Husky)

Husky is concerned that the Balance System Component Pressure Drops will not be repeatable. That is, the pressure drop found by doing a pressure drop test on an individual component would not equal its actual pressure drop when installed on a system. The connection to a mating part, such as a breakaway coupling to the hoses, can give different pressure drops then when tested by itself. Husky has observed this with their testing.

***Response:** We will investigate whether this is an issue with the CARB test bench and proposed test procedure.*

13. Spillage (Husky)

Husky states that the spillage test procedure (TP-201.2C) does not separate spills caused by the vapor recovery system from spills caused by the vehicle or

the person doing the fueling. Husky has found that most spills are not caused by the vapor recovery system.

***Response**: It is important that the spillage results represent "real-world" conditions that include variability from vehicles and persons conducting the fueling. The spillage test procedure allows exclusion of spillage test data due to improper fueling. Section 8.3 of TP-201.2C requires recording "any unusual aspects of any spill which could qualify such spill as resulting from inappropriate us of the system equipment. If the Executive Officer determines that spill resulted from in appropriate use of the system equipment, then record the spill but exclude the results of that spill from the calculations".*

14. Phase I (Nella Oil)

Nella Oil concerns include the sole source provider for EVR Phase I (Phil-Tite), the requirement to use ball floats rather than drop tube overfill prevention and problems with old Phil-Tite gray spill buckets.

***Response:** Phase I systems are outside the scope of the technical review. However, there are EVR Phase I systems under test that utilize drop tube overfill protection. Phil-Tite is offering a recall program for the older gray spill buckets.*

15. Cost Analysis (ARID, Butte Co., CIOMA, Glenn Co., Healy, Husky, Mendocino)

ARID Technologies believes the economics of vapor recovery are more attractive than discussed at the February 5, 2002 workshop due to an overestimate in capital costs and an underestimate in reduced emission levels. The economics of retrofitting existing equipment should not be overlooked or discounted in the cost-effectiveness calculations.

***Response:** The EVR cost analysis contains many conservative assumptions in assessing the EVR cost-effectiveness in terms of $/lb VOC reduced. This is intended to provide a "worst-case" cost, the real cost is expected to be lower.*

Butte County Air Quality Management District estimates that the cost to Butte County gasoline stations will be $42,000 to save one ton of VOC per year ($21/lb) and states that this is an unacceptable high cost for a rural area. Butte County assumes an ISD cost of $7,000 per station for 90 stations to reduce VOC emissions by 15 tons/year.

Response: The cost analysis submitted by Butte County assumes that the total cost of ISD will result in only one year of emissions reductions. The EVR cost analysis translates the total EVR costs into annualized costs by economic techniques, which can then be compared to annual emission reductions. But if we use Butte's simplified approach and assume the ISD system controls

emissions for 5 years without additional cost, then the cost is reduced to $8,400 per ton of VOC or $4.20/lb.

CIOMA questions the validity of the calculations used to derive the emissions benefits of EVR, and the cost projections and cost benefit analysis on ISD. ARB's response to the objection that ISD is too expensive (slide 36) was that "cost effectiveness of ISD systems will depend on the cost of ISD systems and the hydrocarbon emission prevented by ISD." That is a response without being an answer. ISD cost estimates from the single existing system in pilot testing have been murky at best. ARB's cost breakdowns cover only certain components of an ISD, and do not address the whole, nor a manufacturer's recoup of R&D costs, profit margin, testing, labor and market demand, particularly if one ISD has a monopoly. ARB's reluctance to interfere in market forces is well known, but it must surely be acknowledged that these forces will be in play.

The true cost of the ISD is the total cost to get it into performance mode at the station. Cost estimates should take into account not only the finished cost of the ISD itself, but also the cost of integrating that ISD into the Phase II system it is monitoring. Thus, while an ISD system may cost 'X', its total cost must also take into consideration such factors as integration with Phase II equipment, installation and upkeep. It is impossible to do a valid cost vs. emissions benefit analysis until all of the costs are known.

Response: *Staff is working with ISD manufacturers, air districts and other parties to refine the cost analysis for ISD to better reflect the actual cost to the station owner.*

Those costs will be even greater if ISD systems will be required on existing vapor recovery equipment in older or less common systems. Integration with that equipment, if it is even possible, will be more difficult and cost more than integration with new EVR equipment. And, what will be the requirement at stations where it is impossible to retrofit an ISD system because no compatible ISD system exists? If ISD is required on existing vapor recovery equipment, those station owners will have to go to the expense of installing an ISD system twice, once with the existing vapor recovery equipment and again to upgrade to EVR. Cost effectiveness evaluations need to be reassessed to take into account all of the probable costs associated with ISD.

Response: *EVR does not require use of ISD on non-EVR Phase II systems.*

ARB's estimate of the percentage of stations that sell 75,000 or fewer gallons per month (slide 43) is 64.5 % of California's stations. CIOMA believes that it may actually be less than that because so many small throughput stations have gone out of business in the last ten or so years. However, even assuming a 20% differential, that is roughly 44% of stations in California who will not have any realistic hope of affording the costs associated with this program. Their low

volume of throughput will not generate the dollars necessary to fund the new equipment. They would never be able to recoup and repay those costs in the ever-increasingly competitive market. The volume of fuel they sell is disproportionately low to their numbers and to state fuel sales overall. They exist primarily where competition is limited, often where population is thin, because they could not survive otherwise. And those small stations that remain after the 1998 UST upgrades are still years away from paying off the enormous debts incurred in complying with that mandate. What small financial margin they had is pledged already. If ARB wants to take feasibility to a logical conclusion, it would be sensible to exclude GDFs categories 1-3 from ISD.

Response: The revised cost-analysis using the updated ISD costs will be evaluated to determine if the cost-effectiveness for stations greater than160,000 gallons/year warrants exemption from ISD.

The Office of Advocacy, U.S. Small Business Administration report RFP No. SBAHQ-00-R-0027 "The Impact of Regulatory Costs on Small Firms" by W. Mark Crain and Thomas D. Hopkins (2000) observes: "Firms employing fewer than 20 employees face a … burden nearly 60 percent above that facing a firm employing over 500 employees. Environmental regulations and the paperwork burdens of tax compliance are particularly disproportionate in hitting small business. Such regulation imposes about 40 percent of total business regulatory burden." That analysis covers Federal regulations alone. For the small gasoline dispensing facilities in California's hyper-regulated petroleum business arena, the burden is significantly greater and more disproportionate to a major oil company's costs.

The California Regulatory Review Unit, in its "Introduction to RRU", states: "Regulations affect the lives of all Californians and nearly every aspect of the state economy. The Legislature and the Governor have long recognized that excessive or poorly designed regulations can place an unreasonable burden on the people and businesses of this state, and put California at a competitive disadvantage to other states and countries." CIOMA believes that EVR and ISD, as currently proposed, will be the unreasonable burden that drives small gasoline dispensing facilities out of business.

***Response:** Staff recognizes that small businesses in petroleum marketing find it more difficult to meet the regulatory burden than major oil companies. However, state grant and loan programs, such as the RUST program, exist specifically to assist small businesses to maintain compliance with environmental regulations.*

The Glenn County Air Pollution Control District would like CARB to consider raising the ISD requirement exemption level to 75,000 gallons per month. Spreadsheets provided by GCAPCD demonstrate cost effectiveness estimates for levels 2 and 3 (37,500 and 75,000 gpm) for total system costs between $7,500 and $20,000. Although CARB supplied cost figures for ISD, the

GCAPCD believes the number to be higher than stated at the February 5 Technical Review for the following reasons:

- Annual maintenance and calibration costs were not included in the CARB estimate;
- Cost of debt service (if a loan could be secured) was not included in the CARB estimate;
- If the new generation of certified equipment and vapor recovery systems are truly more robust and dependable, the requirement for an ISD system on lower throughput GDFs appears to be excessive;
- Costs of testing (annual, semi-annual, or quarterly) for Leak decay, A/L or dynamic back pressure and any other applicable tests was not considered in the CARB estimate; and
- Existing equipment compatibility with ISD is a major cost issue that was not included in the CARB estimate but could drive installation costs quite high if the operator is required to use the ISD vendor's platform to make the system work. Many low throughput GDFs do not currently have state-of-the-art UST monitoring systems (because it was not cost effective or necessary for them to do so). If the ISD vendor(s) requires the use of their UST monitoring system as the platform, the ISD system cost would be very cost prohibitive.

The spreadsheets provided by GCAPCD indicate a cost-effectiveness of between $14,000 to over $58,000 per ton. Realistically, the cost effectiveness number is probably somewhere in between these numbers. Keep in mind, periodic testing of the vapor recovery systems will still be required and is not included in any of these cost-effectiveness figures.

Response: *We will consider including these costs of in the update of the ISD cost analysis for the technical review.*

Regarding the conservative assumptions presented in the EVR cost analysis, Healy questions that "all vapor recovery equipment components would be replaced". By using the Healy VP1000 system with the Model 800 ORVR Nozzle, no components would have to be replaced since the Healy System as sold today is ORVR certified. Healy research and development efforts with the Model 800 metric ORVR Nozzle indicate that most assist systems will achieve ORVR compatibility without having to replace the vacuum source.

Healy also questions the statement that "EVR nozzles will cost 75% more." The present Healy 800 ORVR and Model 800 metric ORVR nozzles cost no more than do standard Healy vapor recovery nozzles.

Response*: We agree that the assumptions that all hanging hardware will be replaced and that nozzles will cost 75% more are conservative. These*

assumptions help ensure that the calculated EVR costs are "worst case" numbers and that the real costs are expected to be less.

Mendocino County AQMD states they have received essentially no cost analysis from CARB. Mendocino's calculations suggest that for stations pumping less than 450,000 gallons per year the annualized costs to the station will be $3-4,000/yr, with statewide cost per ton of hydrocarbon reduced much greater than $20,000. For stations pumping near 900,000 gallons/yr the annualized costs will be close to $6,000 and the statewide costs per ton reduced will be near $20,000. These costs are totally unreasonable.

Response: *The EVR cost analysis has been available for public review and comment since February 2000. Hardcopies of the EVR staff report and subsequent workshop notices have been provided to all California air districts. The cost analysis will be updated as part of the technical review to reflect the best data available.*

WSPA believes that the target goals for ISD systems, as specified in the ISD Appendix to CP-201, cannot be met in a cost-effective manner.

- The estimated emissions benefit[1] for ISD is slightly greater than the estimated benefit for other Modules; however, that benefit appears to be significantly overstated. In fact, it is entirely speculative to assume that ISD systems will do anything to improve the effectiveness of EVR-certified vapor recovery equipment, or, to further reduce emissions.
- At $7.6 million[2], ISD is the second-highest contributor (behind Module 2, Phase II systems) to the estimated annual costs for the EVR Program. By contrast, the next lower estimated cost (Module 3, ORVR compatibility) is only one-third of the cost of ISD. Nevertheless, in spite of this high estimated cost, we believe that the true installed cost will be even higher.

The estimated CY 2010 emissions benefit for ISD (February 4, 2000 Staff Report, Appendix D), was 6.63 tons/day (state-wide). This emissions estimate was based on circa 1997 observations by air districts of low A/L ratios for two vacuum-assist systems. It was further assumed that these two systems account for 55 percent of the state-wide highway gasoline throughput (in-use effectiveness estimates for balance systems were not factored into the emissions estimates). The circa 1997 estimates for vapor recovery system efficiencies are obsolete – they are simply no longer valid. The emissions benefit estimates need to be re-evaluated to comprehend the following factors:

- The primary motivation for creating the EVR Program was to provide more-effective and more-reliable vapor recovery equipment. Emissions benefits will

[1] EVR Staff Report, February 4, 2000.
[2] Ibid.

be obtained through the implementation of EVR Modules 1 through 5 – not from ISD.

- Ideally, ISD systems will merely remain on stand-by. Conversely, if ISD systems are active and are alerting operators to malfunctions of EVR-certified vapor recovery systems, it will arguably be because the EVR Program, or parts of it, will have proven to be less than successful. By contrast, WSPA believes that the EVR Program will be successful; thus, ISD systems will truly be superfluous.
- It must be assumed that the in-use performance of EVR-certified equipment will be better than, and will last significantly longer than, older-generation vapor recovery equipment. For example, manufacturers of EVR-certified equipment will be required to supply maintenance recommendations for new equipment, and owner/operators will be required to perform inspection and maintenance in accordance with schedules specified in the applicable Executive Order.
- Even older-generation vapor recovery equipment (i.e., that which is currently in use) is currently performing significantly better than the level observed in 1997 due to vastly improved I&M programs and heightened awareness of the benefits of those programs. These I&M programs have helped to identify potential problems early-on, thereby minimizing any degradation of system performance.
- Revised estimates of emissions which might be prevented due to ISD cannot reasonably be based on 365 days of substandard performance with resultant excess emissions. Current testing programs required by air districts would not allow long-term failures of vapor recovery systems to go un-noticed, or, un-corrected. Furthermore, it would be unrealistic to assume that system performance would spontaneously degrade immediately after an annual performance test was conducted.

Response: *Staff agree that EVR vapor recovery systems will be expected to perform better and be more durable that previously certified systems. This does not make ISD systems "superfluous". ISD systems are still needed to ensure systems are operating as certified. Optimum performance of vapor recovery systems relies heavily on proper installation, regular maintenance of equipment and equipment replacement after completion of useful life. ISD will alert the operator when failures occur and prohibit dispensing until the problem is fixed.*

We disagree that "vastly improve" I&M programs" have significantly reduced emissions noted in ARB-district audits for assist and balance systems. A few districts have significantly bolstered enforcement and testing efforts to improve vapor recovery system compliance after discovering that I&M programs did not work. Staff contends that the emission reductions attributable to ISD are higher than estimated in the staff report, as balance system emissions were not available at that time to be included in the total emission reductions.

The projected costs (Staff Report, Appendix E) for ISD systems, for five model RGOs, are based on estimates of the costs for three component parts. WSPA believes that costs for both the individual components (and, there will be more than three components in ISD systems), and for complete systems will be significantly greater than the initial estimates. These costs should be re-evaluated, and the following issues should be addressed in that re-evaluation:

A pressure transducer, plus a flow sensor, combined with a data-logger do not make an ISD system. Numerous other elements are required in order to have even a simple functional system. Thus, the installed cost of an ISD system is not merely the sum of "x" pressure transducers, "y" flow meters, one data-logger, plus installation labor. ISD systems will have to be "packaged". Packaging involves engineering, integration of all of the components, software, wiring, alarms, electrical switchgear, control panels and boxes to house the components, etc. Systems must also be third-party (e.g., UL, etc.) approved. And, the equipment supplier expects to cover overhead – and, to make a profit. All of these costs, combined, comprise the purchase cost of the system, and all of these types of costs must be considered when developing cost estimates for ISD systems. Clearly the most credible cost estimates are those which are derived from vendor quotations. Therefore, WSPA strongly urges the ARB to obtain firm pricing information from those vendors who are interested in supplying their respective ISD systems to the market. Finally, the installed cost of an ISD system is the sum of the purchase cost plus the cost of installation. Installation will include labor for installing pressure or flow sensors at the USTs (or vent lines) and at each dispenser, trenching for electrical wiring, installation of the control panel, tying into the electric circuits which power the turbine pumps, etc. In addition, there will be a cost for filing permits and obtaining construction permits from local air districts. All of these installation costs need to be included in the estimated total installed cost of an ISD system.

The cost of some future ISD systems may be dependent upon the type of installation – that is, a new site, or, retrofit to an existing site. Any difference in installed cost between these two situations needs to be recognized by the cost estimates. In addition, some ISD systems will likely require a signal from electronic point-of-sale "pulsars" in each dispenser, and this requirement will represent an added cost for those sites that do not have compatible equipment.

Response: *Staff will update the cost of ISD as part of the technology review to reflect the cost to a station operator based on the best available information, including data from the ISD system manufacturers.*

16. EVR certification (API, ARID, Healy)

API believes that EVR Phase II systems capable of meeting EVR requirements will have to employ technology-forcing concepts and components. Use of this sophisticated equipment to enhance performance will likely increase the chances

of failure during the durability field-testing part of the certification. Consequently, to improve the likelihood of success, it makes sense to simplify the certification requirements without compromising performance standards.

EVR Module 2 and Module 6 are tied together with a concurrent effective date of April 1, 2003. In order for a Phase II system to become certified, it must be simultaneously certified with an ISD system. This requirement is a considerable burden to Phase II system manufacturers because they must go through certification hoping that the Phase II system and the ISD system will both operate flawlessly throughout the entire certification process.

Decoupling ISD from the Phase II certification requirements would encourage the certification of Phase II systems and allow certification of ISD systems independent of the Phase II certification process. Separating ISD from the Phase II system would provide flexibility to the marketplace, make it easier for states outside of California to allow the use of Phase II systems without requiring that operators install ISD, and certifying systems and equipment in Module 2 without an ISD system would not sacrifice performance and would enhance cost-effectiveness.

Response: *We have considered decoupling ISD from EVR Phase II certification, but have decided that the best EVR Phase II system will be certified while under the continuous monitoring of ISD. We will allow certification of EVR Phase II systems without ISD, however, the certification Executive Orders will be throughput limited to allow use on stations exempt from ISD requirements. We are very concerned about the possibility of an EVR Phase II system certified without ISD being installed with an ISD system that leads to excessive alarms.*

API states that components that are part of a certified system should not be decertified if they are used in a subsequent certification test that fails. Such a policy would have a chilling effect on manufacturers considering whether to pursue additional certifications for an already-certified component or system. It would also put manufacturers in jeopardy of loosing the ability to sell the product on the first certified system. If a previously-certified system or components were to be decertified, it would prohibit their sale and create chaos in the marketplace. Since the law requires system certification, all of the components that are part of that system should remain as certified components regardless of the performance of those components in a separate system certification attempt. That is not to say that the performance of these components should not be checked, but that it should not be a de facto decertification.

Response: *We agree. Certified systems will not be decertified based on their performance in subsequent certifications. However, any problems discovered with the certified system will need to be addressed and may result in amendment to the system Executive Order.*

ARID Technologies requests that "system type" certifications be made available for processor-based systems as discussed in an ARB meeting held on November 29, 2001. System-type certification is being considered for ISD systems, as described in an ARB letter dated January 2, 2002.

ARID Technologies requests that there be no penalty for failure of another system component during processor certification. If the processor performs properly over the operational test period, a failure of a Phase I or Phase II system component should not necessarily result in termination or failure of the processor portion of the test.

Response: *The processor is an integral part of the control of vapor recovery system emissions. The ISD system does not participate in the control of emissions, but serves instead to monitor vapor recovery system operation. This is a crucial difference. The processor must be certified with each system to ensure proper operation.*

Healy believes the certification testing for Phase II with ORVR compatibility should result in a separate certification. We propose that a single test program with both Phase II and ISD systems under simultaneous evaluation can result in both systems achieving their separate certifications. A failure of one of the applicants should not affect the results of the other. The financial risk is too large to require one manufacturer to rely upon another manufacturer's product to achieve certification. If either the Phase II ORVR or ISD Module is certified, the environment is the beneficiary.

Response: *(see response to API above**)***

Healy suggests there should be separate calculations to determine efficiency, i.e., one for pre-1998 vehicles and another for ORVR vehicles. This is to insure that the ORVR vehicles do not mask an efficiency problem in fueling non-ORVR vehicles and vice versa. For example, if an A/L is set to 0.90, this would work well for ORVR vehicles, but it might not achieve 95% efficiency when refueling pre-1998 vehicles.

Response*: TP-201.2 requires calculation of the Phase II emission factor/efficiency for three scenarios: the entire 200-car matrix, ORVR cars and non-ORVR cars. What is not specified, however, is the scenario that would be used to determine compliance with the standard. We will clarify in the next EVR amendments.*

Healy points out that balance-type system testing for EVR certification does not provide for measurement of vapor loss from the underground storage tank under several operating conditions, such as refueling of a motorcycle of filling of a gascan. If the UST pressure at the time were 0.5 inches WC, the volume vented would be approximately 0.1% of the ullage volume. Each such episode would

vent 10.0 gallons of vapor when the gasoline dispensing facility's ullage is 10,000 gallons. This venting can also occur when the balance nozzle does not achieve a good seal at the vehicle fillpipe interface.

Healy encourages CARB to develop a failure mode test to measure the backflow of vapor from the UST during the slow-flow phase of a prepay sale with all bootless vapor recovery systems. Healy tests show about 0.02 cubic feet of vapor will vent through the assist nozzle.

Response: *We will consider including these "failure modes" as part o the next EVR amendments.*

The EVR cost analysis assumed 14 EVR Phase I, 64 EVR Phase II and 16 ISD certifications. Husky points out that the present certifications are really multiple certifications because they contain more then 1 nozzle, hose, swivel, and breakaway coupling. If you have 2 brands of nozzles, dispensers, hoses, breakaway couplings, swivels, and Phase I systems. It would require 2 x 2 x 2 x 2 x 2 x 2 = 64 certification tests to test all the possibilities for balance systems and another 64 for the assist systems. There are more than 2 manufacturers that produce most of these components.

Response: *It is true that "system-specific components" warrant a separate certification test. However, hoses, swivels, breakaways, etc. are listed as "non-system-specific components" and would not require full certification testing once already tested as part of a certified system.*

17. Sole source (CIOMA, WSPA)

CIOMA is concerned by the sole provider status of the only Phase I system and what that status implies. Also, there are serious market competition and practicality of application issues raised by the recent acquisition of Marconi/Gilbarco by Veeder-Root, the developer of the sole ISD nearly ready to begin certification testing.

Response: *Staff agrees that ideally there would be choice of EVR certified systems and is committed to working with equipment manufacturers to increase the number of certified systems. At the same time, a sole vendor should not be penalized for making the effort to comply first with the EVR requirements. Staff will take action if the sole certified system is not commercially available.*

WSPA is concerned that some future ISD systems may require that a site utilize specific proprietary equipment as a platform for the ISD function. Some future ISD systems may only be compatible with specific Phase I or Phase II systems from specific manufacturers. Where requirements of these types exist, the cost of all equipment needed to meet those requirements must be included in the cost assessment for these ISD systems.

Response: *We agree. The ISD cost update will reflect the total cost to station owner to comply.*